



12



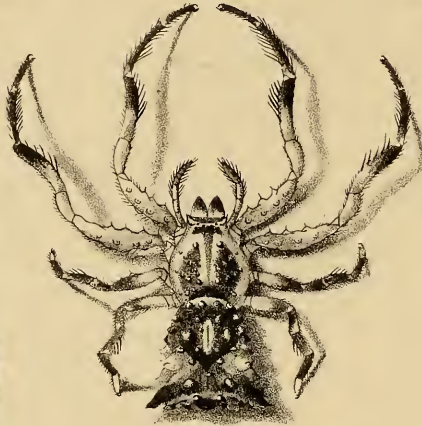
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12a.



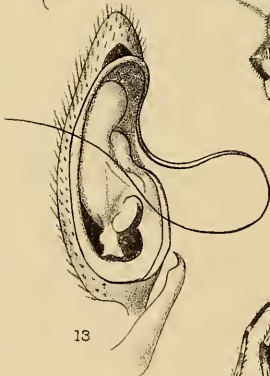
13a.



14



9a.



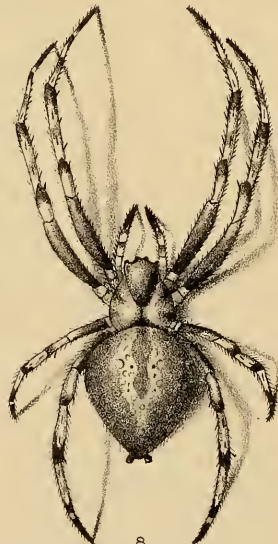
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8c.



11



8



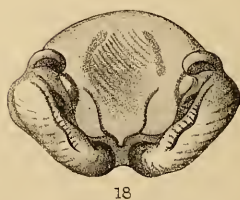
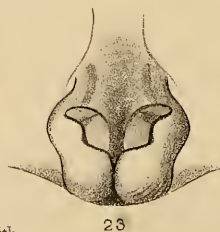
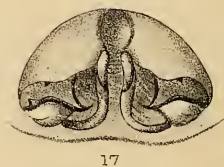
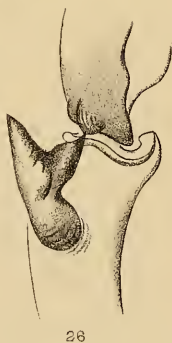
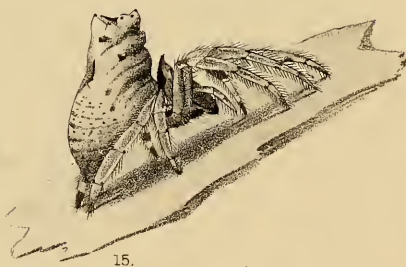
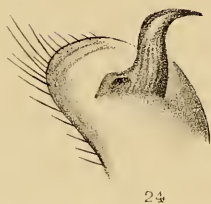
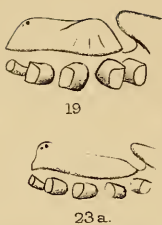
9

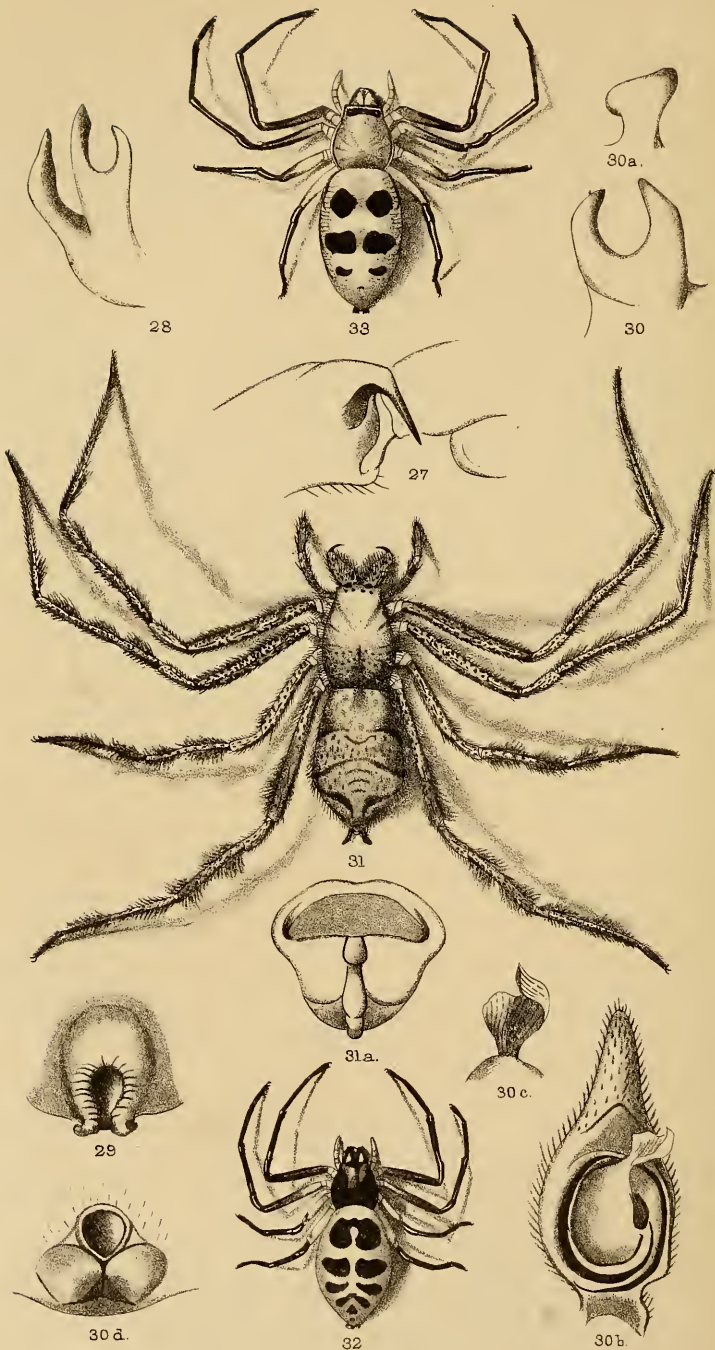


8a.



8b.





F. O. Pickard-Cambridge del. et lith.

West, Newman imp.



could be arrived at. Now at the time this opinion was given my knowledge of the Blue-buck and its habits was but slight; but during my residence in the Cape Colony I have studied them very carefully, and I am now able to advance further reasons why I am convinced that this Kwawa Antelope was not *O. monticola*. At first I could only point to the entirely different coloration, the Kwawa specimen being a warm *yellowish-red*, with *pure white underparts*, and a wash of the mouse-grey colour, peculiar to *O. monticola*, on the frontals and nape of the neck; but it is now evident to me that the habits of the two are quite dissimilar, the Kwawa Antelope being very restricted in its range, more partial to open clearings, less shy, and a less pronounced browser, while its movements are springy and more resemble those of *Nesotragus livingstonianus*, for which Antelope I and my native followers at first mistook it. However, I hope soon to secure other specimens, and until then it is idle to speculate upon the subject.

2. On the Scorpions, Pedipalps, and Spiders from Tropical West Africa represented in the Collection of the British Museum. By R. I. Pocock.

[Received May 24, 1899.]

(Plates LV.-LVIII.)

With the exception of the Attidæ and of some of the more obscure species of other families, which I have not attempted to determine, this paper contains a record of the Arachnida belonging to the Orders Scorpiones, Pedipalpi, and Araneæ, now contained in the British Museum, which have been collected at various times in West Africa between Senegambia in the north and the Congo in the south. Senegambia has been fixed as the northern limit, because it is at that point that the western Ethiopian fauna blends with the western Mediterranean fauna. From the countries lying to the south of the Congo we have very little material; hence this river has been regarded as the southern limit of the area of which the fauna is discussed in the following pages.

By far the richest collection, both as regards numbers of specimens and species, that we have received from this area is the one that has been sent in instalments during the past twelve months by Mr. G. L. Bates from the Benito River in French Congo. This collector, whose name has already been frequently mentioned in the pages of the 'Proceedings' in connection with various rare mammals that he has procured, has been wonderfully successful in his search after Spiders, having sent home representatives of many new species, and added to the National Collection several others which, although previously known, had never found their way into our cabinets.

## Order SCORPIONES.

## Family BUTHIDÆ.

## Genus BUTHUS Leach.

BUTHUS (PRIONURUS) CITRINUS (Hempr. & Ehrenb.).

*Androctonus (Prionurus) citrinus*, Hempr. & Ehrenb. Symb. Phys., Scorp. no. 6, pl. ii. fig. 2.

*Prionurus citrinus*, Pocock, J. Linn. Soc., Zool. xxv. p. 306 (1896).

*Buthus citrinus*, Kraep., Das Tierr., Scorpiones, p. 16 (1899).

*Loc.* Senegal (*Keys. Coll.*, and several specimens procured from Heine).

Apparently extending right across the Saharan region from Senegal to Dongola and Upper Egypt, where it was first procured.

BUTHUS OCCITANUS (Amor.).

*Scorpio occitanus*, Amoreux, Journ. Phys. xxv. p. 9, pl. i. figs. 1-3 (1753).

(= *occitanus* and *europæus* (Linn.) of recent authors.)

*Loc.* Senegal (*Heine*); Gambia (*Sir A. Moloney*).

Senegambia is the southern limit on the west of Africa of this common Mediterranean species.

BUTHUS HOTTENTOTTA (Fabr.).

*Scorpio hottentotta*, Fabr. Ent. Syst. ii. p. 435 (1793).

*Loc.* Gambia (*Mr. Dalton*); Sierra Leone (*Surg.-Capt. Clements* and *E. E. Austen*); Shongo (*W. A. Forbes*); Niger (*Sir R. Murchison*); Asaba, 180 miles up Niger (*Dr. Crosse*).

Genus LYCHAS C. Koch<sup>1</sup>.

LYCHAS ASPER (Poc.).

*Isometrus asper*, Pocock, J. Linn. Soc., Zool. xxiii. p. 445 (1890); Kraep. Das Tierr., Scorpiones, p. 49 (1899) (*Archisometrus*).

*Loc.* Congo (*J. Pinnock* and *A. Curror, Esq., R.N.*); Angola (*Dr. Welwitsch*).

## Genus UROPLECTES Pet.

UROPLECTES OCCIDENTALIS Simon.

*Uroplectes occidentalis*, Simon, Bull. Soc. Zool. Fr. p. 219 (1876).

*Leprus occidentalis*, Poc. P. Z. S. 1890, p. 132, pl. xiv. fig. 4; id. Ann. Nat. Hist. (6) xvii. p. 388 (1896) (*Uroplectes*).

*Tityus chinchoxensis*, Karsch, Z. Naturw. lii. p. 370 (1879).

<sup>1</sup> Based by C. Koch upon two species, *L. maculatus* and *L. scutillus*, which at the present time are not regarded as congeneric. The first is the type of Hemprich and Ehrenberg's genus *Isometrus*. Consequently *L. scutillus* stands, by elimination, as the type of *Lychas*.

Kraepelin applies this system of elimination to the selection of the type of the genus *Heterometrus*, but not to *Lychas*.

*Loc.* Congo (*A. Curror, Esq., R.N., and J. Pinnock*); Cetticamma, Gaboon ('*Gerrard*') ; Angola (*Dr. Welwitsch*).

UROPLECTES ANDREE, sp. n.

Nearly allied to *U. occidentalis* Simon, but recognizable by having the superior edge of the 4th caudal segment armed posteriorly with a tooth-like tubercle like that which is observable on the preceding segments, and the corresponding edges of the 5th caudal segment ending behind in a rounded bifid lobe with a vertical posterior margin ; the tail, moreover, is parallel-sided, not posteriorly incrassate.

*Measurements in millimetres.*—Total length 58, length of carapace 6, of tail 33, of movable digit 7.

*Loc.* Kassai, on the Loangé River, Upper Congo (*Mr. Andrea*).

Genus BABYCURUS Karsch.

BABYCURUS BÜTTNERI Karsch.

*Babycurus büttneri*, Karsch, Berl. ent. Z. xxx. p. 78 (1886); Pocock, Ann. Nat. Hist. (6) xvii. p. 429 (1896); Kraep. Das Tier., Scorpiones, p. 62 (1899).

*Loc.* Benito River (*G. L. Bates*), Cettic-Camma, Gaboon ; mouth of the Loango River (*H. Duggan*).

BABYCURUS KIRKI Poc.

*Rhoptrurus kirki*, Poc. Proc. Zool. Soc. 1890, p. 137.

*Loc.* W. Africa (*Kirk*) ; Lomé, Togoland (*Miller*).

BABYCURUS JOHNSTONI Poc.

*Babycurus büttneri*, Poc. Proc. Zool. Soc. 1890, p. 138 (not of Karsch).

*Babycurus johnstonii*, Poc. Ann. Nat. Hist. (6) xvii. pp. 429-430 (1896).

*Loc.* Rio del Rey (*H. H. Johnston*).

Genus ISOMETRUS Hempr. & Ehrenb.

ISOMETRUS EUROPÆUS (Linn.)<sup>1</sup>.

(= *I. maculatus* De Geer, and almost all modern authors.)

*Loc.* W. Africa (*Dr. Kirk*) ; Sierra Leone (*James Foxcroft, E. E. Austen*) ; Fanti ; Cettic-Camma, Gaboon ; Cameroons (*J. Pinnock*) ; Angola (*Dr. Welwitsch*).

<sup>1</sup> The evidence adduced by Lönnberg (Ann. Mag. Nat. Hist. (7) i. pp. 86-87, 1898) in favour of his view that the Scorpion described by De Geer as *I. maculatus* is the *S. europæus* of the 10th ed. of the 'Systema' appears to me to be more cogent than the evidence in favour of the identity of *Scorpio maurus* and *Scorpio australis* of the latter work. Yet Kraepelin in his 'Tierreich' accepts the two last, but rejects *S. europæus*.

## Genus CENTRURUS (Hempr. &amp; Ehrenb.), Pet.

## CENTRURUS MARGARITATUS (Gerv.).

*Scorpio margaritatus*, Gerv. Voy de la Bonite, i. p. 231, pl. i. figs. 13-17 (1841).

*Centrurus gambiensis*, Karsch, MT. Münch. ent. Ver. iii. p. 123 (1879).

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); recorded by Karsch from Gambia.

Undoubtedly imported from America; perhaps from Jamaica, where the species is common.

## Genus PANDINUS Thor.

## PANDINUS IMPERATOR (C. Koch).

*Buthus imperator*, C. Koch, Die Arachniden, ix. p. 2, fig. 695 (1842).

*Pandinus imperator*, Kraep. Das Tierr., Scorpiones, p. 122 (1899).

(= *roeseli*, Simon; *africanus*, Linn., Thor., Poc., Kraep.)

*Loc.* Slave Coast (*Alvan Millson*); Gold Coast (*Col. Sir F. Festing*); Fanti (*Capt. Marryat*); Ashanti (*W. H. Adams*); 80 miles inland of Axim (*H. G. Eames*); Onitsha on the Niger (*Sir J. Marshall*); Asaba, 180 miles up the Niger (*Dr. Crosse*); Jebba and Ilo, on the Upper Niger (*Dr. Christy*, *Capt. Rigby*, and *Lieut. Abadie*); Wegbe, Ho district, Togoland (*W. G. Innes*); Fernando Po (*Mrs. Burton* and *Capt. Birch*).

## PANDINUS IMPERATOR (C. Koch), subsp. GAMBIENSIS NOV.

? *Heterometrus imperator* (C. Koch), Simon, Rev. Mag. Zool. 1872, p. 55; Becker, Ann. Soc. ent. Belg. xxiv. pp. 137-140 (1880).

Differing from the more southern form of *P. imperator typicus* in having the carapace entirely covered with granules, the terga much more closely and thickly granular, and the ornamentation of the upper surface of the hand much more distinctly tubercular, the tubercles remaining for the most part distinct and not running together into a network of ridges. Pectinal teeth 16-18.

Total length up to about 155 mm.

*Loc.* Gambia (*Sir A. Moloney*; type); also several specimens from Senegal (*Heine*).

## PANDINUS DICTATOR Poc.

*Scorpio dictator*, Poc. Ann. Mag. Nat. Hist. (6) ii. p. 251 (1888); Kraep. MT. Mus. Hamb. xi. p. 70 (1894); id. Das Tierr., Scorpiones, p. 123 (1899).

*Loc.* W. Africa (no history); Fernando Po (*Capt. Birch*; type); mouth of the Loango River (*H. L. Duggan*).



Genus *OPISTHACANTHUS* Pet.*OPISTHACANTHUS LECOMTEI* (Lucas).

*Ischnurus lecomtei*, Lucas, in Thomson's Arch. Ent. ii. p. 428 (1858).

*Opisthacanthus duodecim-dentatus*, Karsch, Berl. ent. Zeit. xxx. p. 79 (1886).

[See also Pocock, Ann. Mag. Nat. Hist. (6) xii. p. 318 (1893); Kraep. Das Tierr., Scorpiones, p. 149 (1899).]

Loc. Benito River (*G. L. Bates*).

This species was not represented in the British Museum until Mr. Bates procured it.

*OPISTHACANTHUS AFRICANUS* Simon.

*Opisthacanthus africanus*, Simon, Bull. Soc. Zool. Fr. i. p. 221 (1876).

*Opisthacanthus septem-dentatus*, Karsch, Z. Naturw. li. p. 372 (1878).

[See also Pocock, Ann. Nat. Hist. (6) xii. p. 316 (1893); Kraep. Das Tierr., Scorpiones, p. 149 (1899).]

Loc. Guinea (in Keyserling's Coll.); Cetté-Camma, Gaboon (*Gerrard*); Congo (*A. Curror, Esq., R.N., J. Pinnock*); Stanley Falls, Congo (*Gerrard*).

## Order PEDIPALPI.

Genus *TITANODAMON* Poc.*TITANODAMON BASSAMENSIS* (Lucas).

? *Phalangium medium*, Herbst, Nat. ungeflügelt. Ins. i. p. 77, pl. iv. fig. 1 (1797).

*Phrynus bassamensis*, Lucas, Arch. Ent. ii. p. 434 (1858).

*Phrynus kochii* and *P. granulosus*, Butl. Ann. Nat. Hist. (4) xii. pp. 120-122 (1873).

*Phrynus savatieri*, Rochebrune, Bull. Soc. Philom. (7) viii. p. 28 (1884).

*Titanodamon bassamensis*, Poc. Ann. Mag. Nat. Hist. (6) xiv. p. 290 (1894).

*Damon medius* (Herbst), Kraepelin, Das. Tierr., Scorpiones, p. 238 (1899).

Loc. Sierra Leone (*H. C. Hart, Surg.-Capt. Clements, C. M. Mitford, &c.*); Dixcove in Ashanti (*B. Frend*); Cape Coast Castle (*J. P. Brown*); Asaba, 180 miles up Niger (*Dr. Crossé*); Gold Coast; Wegbe in the Ho district, Togoland (*W. G. Innes*); Jebba on the Upper Niger (*Dr. Christy*); Cameroons (*Capt. Burton*).

*TITANODAMON JOHNSTONI* Poc.

*Titanodamon johnstoni*, Poc. Ann. Mag. Nat. Hist. (6) xiv. p. 291, pl. viii. figs. 2-2 b.

*Damon medius johnstoni*, Kraep. Das Tierr., Scorpiones, p. 239 (1899).

Loc. Fernando Po (*Vigors Coll.*); Old Calabar (*J. W. Cockburn and Miss Kingsley*); Cameroons (*H. H. & J. M. E. Johnston, Miss Kingsley*); Rio del Rey (*H. H. Johnston*); Benito River (*G. L. Bates*).

TITANODAMON TIBIALIS (Simon).

? *Phrynus tibialis*, Simon, Bull. Soc. Zool. Fr. i. pp. 12-15 (1876).  
*Titanodamon tibialis*, Poc. Ann. Mag. Nat. Hist. (6) xiv. p. 291 (1894).

*Damon medius tibialis*, Kraep. Das Tierr., Scorpiones, p. 239 (1899).

Loc. Congo (*A. Curror, Esq., R.N.*); West Africa (*Mr. Dalton*).

## Order ARANEÆ.

### MYGALOMORPHÆ.

#### Family THERAPHOSIDÆ.

##### Subfamily THERAPHOSINÆ.

(= *Theraphosinæ*, *sensu stricto*, Pocock, P. Z. S. 1897, p. 772.)

#### Genus SCODRA Becker.

SCODRA CALCEATA (Fabr.).

*Aranea calceata*, Fabr. Ent. Syst. ii. p. 427.

*Scodra aussereri*, Becker, CR. Soc. Ent. Belg. 1879, p. cxlii;  
ibid. 1881, pl. ii. fig. 1.

*Stromatopelma alicapillatum*, Karsch, Berl. ent. Zeit. 1881,  
p. 218.

*Scodra calceata*, Pocock, Proc. Zool. Soc. 1897, pp. 755 & 756  
(*sensu stricto*).

Loc. Accra (*G. A. Higlett*); Cameroons (*Capt. Burton*); Ashanti;  
Afram plains.

SCODRA GRISEIPES Poc.

*Scodra griseipes*, Poc. Proc. Zool. Soc. 1897, p. 756, pl. xliii. figs.  
7-7 a.

Loc. Sierra Leone (*C. Wilson and C. M. Mitford*).

SCODRA BRACHYPODA Poc.

*Scodra brachypoda*, Poc. loc. cit. p. 757, pl. xliii. figs. 8-8 a.

Loc. Asaba on the Niger (*Dr. Crosse*); Cape Palmas (*Alvan Millson*).

## SCODRA FUMIGATA, sp. n.

♀. *Colour*. Carapace and upperside of mandible clothed with bright, almost mustard-yellow or greyish-yellow hairs; upperside of femora and patellæ of palpi and anterior legs olive-yellow; tibiæ with a basal greyish-white patch and two short median lines; protarsi and tarsi with median black patch; setæ on the limbs greyish; the upperside of the fringes bordering the leg-segments greyish brown; upperside of abdomen greyish brown, with symmetrically disposed darker patches and bars; *the entire underside of legs and palpi, excepting the scopulæ, of abdomen, coxæ, and sternum deep sooty-black*; circumoral hairs crimson.

Thoracic fovea deep and subcircular; carapace distinctly shorter than patella and tibia of 1st leg, and stouter by one third of the protarsus than the tibia and protarsus of this limb; less also than patella and tibia and than tarsus and protarsus of 4th.

*Legs* 4, 1, 2, 3 in length; patella and tibia of 4th a little greater than of 1st, 4th leg about three times as long as the carapace; segments of legs thickly fringed.

*Measurements in millimetres* (♀ type).—Total length 44; length of carapace 21, width 18; length of 1st leg 60 (patella + tibia 23), 2nd leg 58 (patella + tibia 22), 3rd leg 53 (patella + tibia 9), 4th leg 64 (patella + tibia 23.5, protarsus 16).

*Loc.* Benito River (*G. L. Bates*).

The distinguishing characters of the females of the known species of the genus *Scodra* may be re-stated as follows:—

- |  |                        |
|--|------------------------|
| a. Carapace longer than patella + tibia of 1st leg and as long as tibia + protarsus of this limb .....   | <i>brachypoda</i> Poc. |
| b. Carapace shorter than patella + tibia of 1st leg and shorter than the protarsus and tarsus of this limb by one third of the protarsus.  |                        |
| a <sup>1</sup> . 4th leg longer than 1st and about three times as long as the carapace; patella + tibia of fourth a little longer than those of 1st; tibiæ of legs sooty black below | <i>fumigata</i> sp. n. |
| b <sup>1</sup> . 4th leg shorter than 1st and much less than three times as long as carapace; patella + tibia of 4th much less than those of 1st; tibiæ not sooty black below.       |                        |
| a <sup>2</sup> . Lower and inner surface of femora of palp and of first pair of legs greyish or yellowish brown; setæ yellowish brown .....  | <i>griseipes</i> Poc.  |
| b <sup>2</sup> . Lower side of femora of all the legs and inner surface of femora of palp and 1st and 2nd legs sooty black; bristles on legs foxy red .....                          | <i>calceata</i> .      |

## Genus HETEROSCODRA, nov.

This new genus and *Scodra*, its nearest ally, may be diagnosed as follows:—

- |   |                            |
|---|----------------------------|
| a. Fourth leg thinner than first; the tibia of 4th thinner than patella and femur, the height and width of the tibia about one quarter the length .....   | <i>Scodra</i> Becker.      |
| b. Fourth leg thicker and stronger than 1st; the tibia thick, its height a little exceeding the height of the patella, equal to that of the femur, and about one half the length of the tibia ..... | <i>Heteroscodra</i> , nov. |

## HETEROSCODRA MACULATA, sp. n.

♀. *Colour*. Carapace covered with white hairs round the margin and furnished with narrow white stripes which radiate from the fovea to this white border, the intermediate area clothed with hairs of an olive-green tint, forming two indefinite longitudinal bands starting with a deep patch of the same tint on each side of the ocular tubercle; upperside of abdomen olive-green, mottled with white; mandibles black, covered with ashy-grey hairs; legs deep red, covered with ashy-grey hairs; the naked lines on femora, patellæ, and tibiæ very distinct; hairs on femora and tibiæ whiter than on the rest of the limbs, the distal extremities of which are clothed with foxy-red bristles, with a greenish underclothing; upperside of tibiæ with two submedian white lines or spots, on the proximal side of which there are a pair of blackish bands; a large black spot on the upperside of the tarsus and on the basal half of the protarsus, as in *Scodra*; the extremities of the segments with a narrow rim of white hairs; lower side of trunk and limbs uniform ashy grey, the scopulæ bluish green.

*Carapace* longer than wide, the width almost equal to the length from the anterior median eye to the posterior border. Eyes as in *Scodra*; the length of carapace a little less than patella, tibia, and tarsus of palp, a little excelling patella and tibia of 1st leg, less than those of 4th leg, equal to tibia, protarsus, and half the tarsus of the 3rd, less than protarsus and tarsus of 4th, greater than those of 1st; the width a trifle less than patella and tibia of 1st, and just exceeding those of 2nd leg.

*Legs* 4, 1, 2, 3, without spines, scopulate as in *Scodra*; protarsus of 4th longer than tibia of 4th, and as long as protarsus and half the tarsus of the 1st.

*Measurements in millimetres*.—Total length 30; length of carapace 16, width 14·5; length of 1st leg 42, of 4th 48, patella and tibia of 1st 15, of 4th 18; length of tibia of 4th 10·5, height 4·5.

*Loc.* W. Africa (*F. W. Marshall*).

A single female specimen of this interesting new spider was received from this Society, to which it had been presented alive by Mr. F. W. Marshall. This specimen lived for some months in the Insect-house at the Society's Gardens, and was referred to by Mr. A. Thomson as *Scodra calceata* in his report upon the Insect-house for 1897 (see P. Z. S. 1898, p. 81). Though very closely resembling *Scodra calceata* in colour, the spider was found, upon closer examination after death, to be the representative of quite a distinct species.

## Genus SELENOGYRUS Poc.

## SELENOGYRUS CÆRULEUS Poc.

*Selenogyrrus cæruleus*, Poc. Proc. Zool. Soc. 1897, p. 768.

*Loc.* Sierra Leone (*Surg.-Capt. Clements and E. E. Austen*).



## SELENOGYRUS AUREUS Poc.

*Selenogyrus aureus*, Poc. op. cit. p. 768, pl. xli. figs. 2-2 a.

Loc. Sierra Leone (no further history).

*Hapalopus africanus* Simon, from Assinie (Ann. Soc. Ent. Fr. 1887, p. 275), perhaps belongs to the genus *Selenogyrus* (see Pocock, P. Z. S. 1897, p. 774, note).

## Genus MIASCHISTOPUS Poc.

## MIASCHISTOPUS RAPIDUS Poc.

*Miaschistopus rapidus*, Poc. Proc. Zool. Soc. 1897, p. 770, pl. xli. fig. 5.

Loc. W. Africa (*Keyserling Coll.*).

## Subfamily EUMENOPHORINÆ,

Pocock, Proc. Zool. Soc. 1897, pp. 772 &amp; 773.

## Genus EUMENOPHORUS Poc.

## EUMENOPHORUS CLEMENTSI Poc.

*Eumenophorus clementsi*, Poc. Proc. Zool. Soc. 1897, p. 766.Loc. Sierra Leone (*Surg.-Capt. Clements*).

## Genus PHONEYUSA Karsch.

*Phoneyusa*, Karsch, Berl. ent. Zeit. 1884, p. 347 (type *P. belandana* Karsch).

*Harpaxotheria*, Simon, Actes Soc. Linn. Bord. 1889, p. 413 (type, *H. antilope* Simon).

The species of Spiders here and in my previous paper on the African fauna referred to *Phoneyusa* have been identified as belonging to that genus on the strength of M. Simon's statement (Hist. Nat. Araignées, i. p. 154, 1892) that the type species of *Phoneyusa* and *Harpaxotheria* are congeneric.

Nevertheless it is possible that the two forms will prove generically separable. If Karsch's description of *P. belandana* is reliable, that species differs from all the species which I refer to *Phoneyusa* and which doubtless belong to *Harpaxotheria*, in the strict sense of the word, in the following features:—

- a. Carapace about one third longer than broad ( $34:22\frac{1}{2}$ ); sternum also about one third longer than broad ( $15\frac{1}{2}:10\frac{1}{2}$ ); tibiae of legs with many apical spines, 8-9 on the 1st and 2nd, 4 on the 3rd and 4th..... *belandana* Karsch.
- b. Length of carapace and sternum exceeding the respective widths by less than one quarter of the length; tibiae of legs in ♀ at most with a pair of apical spines ..... *antilope* Sim.  
*occidentalis*, Luc., *büttneri*, Karsch (? spinal armature).

But although there is thus a possibility of resuscitating *Harpaxotheria*, it must be remembered that the apparently greater narrowness of the cephalothorax in *P. belandana* may be due to artificial shrinkage, and that too great stress should not be laid upon the tibial spine-armature, seeing that in the male of *P. gregorii*, which is apparently congeneric with *P. antilope* and *P. occidentalis*, the tibia of the 1st leg is armed with 5 spines, the 2nd with 3, and the 3rd and the 4th with 2 each.

Again, before *Harpaxotheria* be rescued from the world of synonyms, it will have to be ascertained that it is distinguishable from Karsch's previously established genus *Pelinobius*, a point about which great doubt may be entertained.

PHONEYUSA OCCIDENTALIS (Lucas).

*Mygale occidentalis*, Lucas, Thomson's Arch. Ent. ii. p. 380 (1858).

♀. *Colour*. Integument of carapace, mandibles, and legs uniform deep reddish brown, covered with deep olive-green hairs; the distal segments of the palpi and of the first two pairs of legs much redder in the young; femora, patellæ, tibiæ, and protarsi with a fringe of yellowish-pink hairs at their distal extremities; abdomen greenish brown; the long bristles on the legs and abdomen reddish.

*Carapace* considerably longer than patella and tibia of 4th and 2nd legs, a little longer than those of 1st, longer than tarsus and protarsus of 4th, much longer than those of 1st, a little longer than patella, tibia, and tarsus of palp; its width a little less than the area between the posterior emargination and the ocular tubercle, much exceeding the 4th protarsus and just exceeding protarsus and tarsus of 1st leg, a little longer than femur of 4th leg.

*Legs* 4, 1, 2, 3; 4th exceeding 1st by one fourth the length of its tarsus; tibiæ with a pair of distal spines below, protarsus of 1st with 1 median apical spine, of 2nd with 3 spines, of 3rd and 4th with about 9 spines in a transverse row.

*Measurements in millimetres*.—Total length 62; length of carapace 32, width 26; length of palp 47, of 1st leg 78, of 2nd leg 69, of 3rd leg 63, of 4th leg 79, patella and tibia of 1st 30, of 4th 27, protarsus of 4th 21 (legs and palpi measured from base of femur).

In younger females the legs are much longer as compared with the carapace than in the adult.

*Loc.* Benito River (*G. L. Bates*).

This species has not been hitherto recognized since it was first established.

It certainly differs from *P. belandana* Karsch (Berl. ent. Zeit. 1884, p. 348), from Niam Niam in Central Africa, in having only a pair of spines at the apex of the tibiæ, instead of a large number as in *P. belandana*; that is to say, 9 on the 1st tibia, 8 on the 2nd, &c. In *P. belandana* also the sternum is nearly twice as long as wide (15:8), whereas in *P. occidentalis* the length is only a little greater than the width (9:7.5). In the character of the sternum *P. occidentalis* resembles *P. büttneri* Karsch (Berl. ent. Zeit. 1886, p. 83), from

Sibange Farm, Gaboon, with which it may prove to be identical. Karsch, however, says nothing about the colouring of *P. büttneri*, nor about the spine armature of the legs.

From *P. (Harpaxotheria) antilope* Simon (Act. Soc. L. Bordeaux, xlii. p. 414, 1889), from Tomby in the Congo, *P. occidentalis* also differs, judging by the leg-measurements that Simon gives. For example, the 4th leg in the type of *P. antilope* exceeds the 1st by about 10 mm. (63·2: 53·5), that is to say, by considerably more than the length of the tarsus of either limb, whereas in *P. occidentalis* the difference does not amount to more than half the tarsus.

PHONEYUSA BIDENTATA, sp. n. (Plate LVI. fig. 11.)

♂. *Colour*: a uniform dull greyish-brown clothing of hairs on the trunk and limbs, the long bristles on the legs and abdomen reddish grey, the integument beneath the hairs nearly black; a narrow fringe of pale pinkish hairs at the distal end of the femora, patellæ, tibiæ, and protarsi.

*Carapace* longer than wide, its length slightly exceeding that of patella, tibia, and tarsus of palp, equal to protarsus and femur of 4th leg, considerably less than patella and tibia of 4th leg, a little greater than patella and tibia of 3rd leg, its width just about equal to femur of 2nd.

*Legs* long and slender (those of 1st pair absent), with two or three spines at the apex of tibiæ beneath, about 4 on apex of 2nd protarsus, and a row of about 8 on apex of 3rd and 4th protarsi; 4th leg exceeding the 2nd by about two thirds of its protarsus, patella and tibia of 2nd about equal to those of 4th, the tarsi about equal; tarsus of 4th, including claw, about equal to patella of 4th; bristles upon legs and abdomen hooked at their distal ends. Tibia of *palp* about three times as long as broad; bulb of palpal organ subcircular and furnished with two spines, the principal spine rather short, stout, not filiform, furnished externally with two keels which pass on to the bulb, the smaller spine in front of the larger, much smaller than it and curved in the opposite direction.

*Measurements in millimetres*.—Total length 41; length of carapace 23, width 20·5; length of palp 35, of 2nd leg 74, of 3rd 65, of 4th 80, patella and tibia of 4th 27; protarsus of 4th 23·5, tibia of 4th 18, tarsus 9.

*Loc.* Benito River (*G. L. Bates*).

This species differs from all the known species of *Phoneyusa* that are based upon male examples in the possession of a second spiniform process on the bulb of the palpal organ.

These species are *P. (Harpaxotheria) gracilipes* Simon, from the Congo, and *P. (Harpaxotheria) ectypa* Simon, from Abyssinia (Act. Soc. L. Bordeaux, xlii. pp. 414–415); *P. gregorii* Pocock (Proc. Zool. Soc. 1897, p. 760, pl. 43. fig. 6), from Masailand, and *P. bettoni* Pocock (Proc. Zool. Soc. 1898, p. 503), from the area between Mombasa and Uganda.

## Genus HYSTEROCRATES Simon.

## HYSTEROCRATES GIGAS Poc.

*Hysteroocrates gigas* Poc. loc. cit. p. 762.

Loc. Cameroons (*J. M. C. Johnston*); Oil River (*H. H. Johnston*).

## HYSTEROCRATES LATICEPS Poc.

*Hysteroocrates laticeps* Poc. loc. cit. p. 765, pl. xli. figs. 4-4 b.

Loc. Old Calabar (*Miss Kingsley*).

## HYSTEROCRATES CRASSIPES Poc.

*Hysteroocrates crassipes*, Poc. loc. cit. p. 764, pl. xli. fig. 4 c.

Loc. Cameroons (*H. H. Johnston*).

## HYSTEROCRATES HERCULES, sp. n.

♀. *Colour*. Integument black, covered with a thick coating of dark olive-brown hairs, shining with greyish silky sheen under reflected light.

*Carapace* a little longer than patella and tibia of 1st and of 4th leg, longer than tarsus and protarsus of 4th and than patella, tibia, and tarsus of palp; its width equal to length from tubercle to posterior emargination and to femur and patella of 3rd leg, and to femur and one third of patella of 4th leg; a transverse depression in front of fovea, marking off a transversely oval tubercle.

*Mandibles* tubercular in front.

*Legs* 4, 1, 2, 3; 4th exceeding 1st by nearly half its tarsus; patella and tibia of 4th not longer than of 1st; 4th leg not in any sense thickened, femur more than three times as long as high (25:7·8), thicker than patella, which is considerably thicker and higher than tibia; tibia slightly concave below and in the basal half above, more than three times as long and wide as high (17·8:5·2); length of upperside of patella more than twice its height or width.

*Measurements in millimetres*.—Total length 74; length of carapace 34, width 30; length of palp 49, of 1st leg 81, 2nd leg 72, 3rd leg 67, 4th leg 88; patella and tibia of 1st 33, of 4th 32; tarsus and protarsus of 4th 31.

Loc. Jebba, Upper Niger (*Lieut. Abadie*).

Recognizable from the other known species of the genus by its large size, darker colouring, and by having the 4th leg unmodified, not thicker than the 1st, and only exceeding it in length by less than half its tarsus.

## HYSTEROCRATES ROBUSTUS, sp. n.

♀. *Colour* olive-greenish brown, with reflexions of greyish-white pubescence.

*Carapace* considerably longer than wide, the width equal to the distance between the ocular tubercle and the median emargination; the length equal to that of patella and tibia of 4th leg, greater than those of 1st and greater than tibia and protarsus of 1st; the width



slightly exceeding the length of the outer surface of the femur of the 4th leg.

*Legs* 4, 1, 2, 3; 4th exceeding the 1st by rather more than the length of its tarsus; patella and tibia of 4th a little longer than of 1st (24:22); 4th leg strong, but the patella and tibia narrower than the femur; width and height of patella about equal, but barely equal to half the length measured along the upperside; tibia lightly convex above, its width a little greater than one third of its length and a little less than its height; protarsus longer than tibia (15·5:13·5); femur of 4th leg very robust, its height exceeding one third of its length.

*Measurements in millimetres.*—Total length 53; length of carapace 24, width 20; length of 1st leg 55, of 2nd 49, of 3rd 4, of 4th 65; length of femur of 4th leg 18·5, height 7; length of the tibia 13·5, height 5.

*Loc.* Benito River (*G. L. Bates*).

The subjoined table will show how this species may be distinguished from the rest of the species of *Hysterochrates* known to me:—

- |   |                          |
|---|--------------------------|
| a. Width of tibia of posterior leg equal to that of femur;<br>tarsus of palp more tumid above at base .....                 | <i>crassipes</i> Poc.    |
| b. Width of tibia of posterior leg much less than width of<br>femur; tarsus not tumid above at base.                        |                          |
| a <sup>1</sup> . Carapace long; area between ocular tubercle and pos-<br>terior median emargination exceeding the width ... | <i>gigas</i> Poc.        |
| b <sup>1</sup> . Carapace wider, its width equal to the area between the<br>tubercle and the posterior emargination.        |                          |
| a <sup>2</sup> . Femur of 4th leg slender, its height barely one third<br>of its length.                                    |                          |
| a <sup>3</sup> . Hairy clothing of legs reddish brown; 4th leg<br>thickened, the tibia almost as thick as the femur.        | <i>laticeps</i> Poc.     |
| b <sup>3</sup> . Hairy clothing deep olive-brown; 4th leg unmodi-<br>fied, the tibia much thinner than the femur .....      | <i>hercules</i> , sp. n. |
| b <sup>2</sup> . Femur of 4th leg stout, its height considerably<br>exceeding one third of its length.....                  | <i>robustus</i> , sp. n. |

### Family BARYCHELIDÆ.

#### Genus CYPHONISIA Simon.

##### CYPHONISIA OBESA Simon.

*Cyphonisia obesa*, Simon, Act. Soc. L. Bordeaux, xlii. p. 409 (1889).

*Loc.* Benito River (*G. L. Bates*).

Two immature specimens probably referable to this species, which was recorded from the Rio Quilou (Congo).

### Family DIPLURIDÆ.

#### Genus HETEROTHELE Karsch.

*Heterothele*, Karsch, SB. nat. Fr. Berlin, 1879, p. 64; Pocock, Proc. Zool. Soc. 1897, p. 736.

PROC. ZOOL. SOC.—1899, No. LV.

? *Heterothele gabonensis* (Lucas).

*Mygale gabonensis*, Lucas, Arch. Ent. 1858, p. 382.

? *Diplura longipalpis*, Karsch, Zeits. Naturwiss. (3) iv. p. 564.

Two female specimens of a species referable to *Heterothele*, obtained by G. L. Bates on the Benito River, are regarded as probably identical with *Mygale gabonensis*, Lucas.

Family CTENIZIDÆ.

Genus ACANTHODON, Guér.

ACANTHODON ANGUSTICEPS, sp. n.

♀. Very closely resembling, both in size and spine-armature, &c., *A. lacustris*, Pocock (Proc. Zool. Soc. 1897, p. 731, pl. xli. fig. 7), from Lake Tanganyika. The two species may be separated as follows:—

- |    |  |                             |
|----|--|-----------------------------|
| a. | Carapace broader as compared with its length (7·8:9), width equal to the distance between the posterior border and the anterior border of the ocular cluster; the two ocular tubercles higher, the area behind the posterior considerably more depressed owing to the greater elevation of the cephalic prominence; sternum wider as compared with its length (4·8:5); legs longer, length of 1st 18·8, of 4th 23, tarsus and protarsus of 4th 8; palp from base of femur 16, its three distal segments 9·8..... | <i>lacustris</i> Poc.       |
| b. | Carapace narrower, its width as compared with its length being 6·8:9, width equal to the length between the posterior border and posterior edge of the ocular tubercle; ocular tubercle lower, but little elevated, area behind the ocular cluster but little depressed; sternum narrower, very distinctly narrower than long (4:5); legs shorter, length of 1st 17, of 4th 22, tarsus and protarsus of 4th 7; of palp 15, its three distal segments 9 ..  | <i>angusticeps</i> , sp. n. |

Slight differences also are observable in the eyes, the posterior medians being a little closer together, more directly behind the medians and a little farther from the laterals. I have very little confidence, however, in the taxonomic value of slight apparent differences in the size and relative positions of these organs.

*Loc.* Benito River (G. L. Bates).

A single female example was procured.

ARACHNOMORPHÆ.

Family DINOPIDÆ.

Genus DINOPIS Macleay.

DINOPIS BUBO Brit. Capello.

*Dinopis bubo*, Brit. Capello, Mem. Ac. Sci. Lisboa, (3) iv. pt. 1: Arachnideos etc. p. 16, pl. ii. fig. 3.

*Loc.* Gaboon.

Recorded from the River Quilo.

*DINOPIA ASPECTANS*, sp. n.

♀. *Colour.* Carapace yellowish brown, covered with whitish hairs, reddish hairs around the eyes; mandibles pale yellow, sparsely speckled with black, scantily clothed with yellow hairs; mouth-parts yellow; sternum yellow, blackish at the sides, mottled with yellow and white hairs; palpi yellowish brown, mottled with black; legs brownish, femora infusate distally, the anterior pairs also infusate beneath and spotted with black at the base of the spines above, patellæ fuscous, tibiæ distally infusate, 3rd and 4th pairs with superior distal spot, protarsi yellowish indistinctly speckled with black; abdomen clothed laterally and below with whitish hairs, with four white spots and two parallel lines on the area between the epigastric fold and the cribellum; the upper surface covered with darker hairs, with a low crest of hairs passing transversely in front of the prominences and curving backward on the sides.

*Carapace* nearly twice as long as wide, its length equal to that of tibia of 3rd leg, a little more than one third that of the 1st protarsus, less than half (about two fifths) the length of the 1st femur; cephalic area a little wider in front than behind; superciliary ridges evenly rounded, not prominent or produced into horn or tooth; the posterior median eyes close together, their radius exceeding the height of the clypeus, anterior medians about two diameters apart.

*Palpi* very slightly longer than carapace.

*Legs* 1, 2, 3, 4; 1st twice as long as 3rd, 1st exceeding the 2nd by half its protarsus and its tarsus; 3rd reaching to apex of tibia of 2nd when both are extended; on the femora of the 1st and 3rd the anterior spines are supported on tubercles which also support small tufts of hair.

*Abdomen* rather more than twice as long as wide, posteriorly pointed and compressed, widest just in front of the middle, where it rises into a pair of prominences, from which it narrows anteriorly and posteriorly.

*Measurements in millimetres.*—Total length 19; length of carapace 7, width 4; length of abdomen 12, width 5; length of 1st leg 58, of 2nd 45, of 3rd 29, of 4th 28.

*Loc.* Benito River (*G. L. Bates*); a single ♀ example.

This new species may be at once recognized from *D. anchietæ* (*Dinopia anchietæ*, Brit. Cap. *loc. cit.* p. 15, pl. ii. figs. 2-2 c), from Rio Quilo, Angola, by the absence of triangular superciliary crests, the greater length of legs, flatter and longer carapace, proximity between posterior median eyes, &c. In *D. anchietæ* the eyes are concealed by the crests when viewed from above and are nearly a radius apart; the thoracic portion of the carapace is as wide as long, and although the length of the trunk is about the same as in *D. aspectans*, the anterior leg measures only 41 mm. instead of 58.

## Family ARGIOPIDÆ.

## Genus NEPHILA Leach.

## NEPHILA FEMORALIS (Lucas).

*Epeira femoralis*, Lucas, Thomson's Arch. Ent. ii. p. 38, pl. xii. fig. 4 (1858).

*Nephila vittata*, Keys. SB. Isis, Dresden, 1863, p. 142, pl. ii. fig. 2.

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); Liberia (*Keyserling Coll.*, type of *N. vittata*); Gold Coast (*T. E. Bowdich*); Ashanti (*W. H. Adams*); Asaba, 150 miles up Niger (*Dr. Crosse*); Accra and Wassan (*G. A. Higlett*); Cameroons (*Capt. Burton, Miss Kingsley*); Old Calabar (*Miss Kingsley, H. A. Spencer*); Benito River (*G. L. Bates*); Stanley Falls, Congo; Angola.

## NEPHILA LUCASI Simon.

*Epeira chrysogaster*, Lucas, Thomson's Arch. Ent. ii. p. 35 (not *chrysogaster*, Leach).

*Nephila lucasi*, Simon, Ann. Soc. Ent. France, 1887, p. 270.

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); Ashanti (*Mr. Macarthy*); Accra (*G. A. Higlett*); Cameroons (*Capt. Burton, Miss Kingsley*); Benito River (*G. L. Bates*); Wathen on the Congo (*Miss Macormick*).

## NEPHILA PILIPES (Lucas).

*Epeira pilipes*, Lucas, Thomson's Arch. Ent. ii. p. 40, pl. xiii. fig. 7.

*Loc.* Fantee, Accra (*G. A. Higlett*); Benito River (*G. L. Bates*).

## NEPHILA BRAGANTINA Brit. Capello.

*Nephila bragantina*, Brit. Capello, Mem. Ac. Sci. Lisboa, (3) iv. pt. 1: Descrição de algumas especies de . . . Arachnideos, p. 11, pl. ii. fig. 4.

*Loc.* Braganza, interior of Angola (*Brit. Cap.*).

The British Museum has no examples of this species from W. Africa, but has received specimens of apparently the same form from Kinyamholo, Lake Tanganyika (*A. Nutt*). *N. bragantina* differs from *N. keyserlingii* Blackw. (= *hymenaea* Gerst.) in having the palpi black, the legs black with the exception of a yellow band at the tip of the tibia and base of protarsus of 1st and 2nd legs, and no dark band in the middle of the sternum.

## NEPHILA CRUENTATA (Fabr.).

*Araneus cruentatus*, Fabr. Ent. Syst. ii. p. 427 (1793).

*Nephila genualis*, Gerst. Von der Decken's Reisen, iii. 2, p. 502 (1873).

*Loc.* Sierra Leone (*D. F. Morgan, Surg.-Capt. Clements*); Ashanti (*Mr. Macarthy*); Onitsha on the Niger (*Sir J. Marshall*); Old Calabar (*H. A. Spencer*); Congo (*J. Pincock*); Stanley Falls, Congo.



The following W. African species of this genus is unknown to me:—

*NEPHILA CONSTRICTA* Karsch.

*Nephila constricta*, Karsch, Zeits. gesammt. Naturwiss. lii. p. 834, fig. 4 (1879).

*Loc.* Loango coast.

Genus *ARIGIOPE* Aud. et Sav.

*ARGIOPE FLAVIPALPIS* (Lucas).

*Epeira flavipalpis*, Lucas, Thomson's Arch. Ent. ii. p. 49 (1858).

*Argiope flavipalpis*, Brit. Capello, Journ. Sci. Lisboa, i. p. 83, pl. ii. fig. 2 (1866).

*Argiope pechueli*, Karsch, Zeits. gesammt. Naturwiss. lii. p. 340 (1879).

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); Old Calabar (*Miss Kingsley*); Cameroons (*Capt. Burton* and *Sir Harry Johnston*); Benito River (*G. L. Bates*).

The legs of this species vary in tint: sometimes they are noticeably striped black and yellow, as in the form to which Karsch gave the name *pechueli*, and sometimes of a very much darker, more uniform hue as in the typical *A. flavipalpis*. The two forms occur at the same locality, and gradations in the coloration of the legs are traceable. I therefore regard *A. pechueli* as a synonym of *A. flavipalpis*.

*ARGIOPE NIGROVITTATA* Thorell.

*Argiope nigrovittata*, Thorell, Öfv. Vet.-Akad. Förhandl. p. 300 (1860).

*Argiope caudata*, Blackwall, Ann. Mag. Nat. Hist. (3) xvi. p. 346 (1865).

*Argiope zairiensis*, Brit. Capello, Journ. Sci. Lisboa, i. p. 82, pl. ii. fig. 1.

*Argiope suavissima*, Gerstäcker, Von der Decken's Reisen, iii. 2, p. 495, pl. xviii. fig. 10 (1873).

*Loc.* Congo; Benguela (*J. J. Monteiro*).

Genus *ARANEUS* Linn.

*ARANEUS RUFIPALPIS* (Lucas).

*Epeira rufipalpis*, Lucas, Thomson's Arch. Ent. ii. p. 422 (1858).

*Epeira semiannulata*, Karsch, Zeits. gesammt. Naturwiss. lii. p. 334 (1879) (♀); Simon, Bull. Soc. Zool. France, ix. p. 14, pl. ii. figs. 7-8 (1884) (♂, ♀).

? *Epeira penicillipes*, Karsch, loc. cit. p. 836 (♂).

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); Accra (*G. A. Higlett*); Cameroons (*Capt. Burton*); Benito River (*G. L. Bates*). This species also occurs on the eastern side of the continent of Africa.

It appears to me that the descriptions given of *E. rufipalpis* and

*E. semiannulata* were based upon examples belonging to the same species. Karsch's figure of the palp of *E. penicillipes* resembles that organ in male examples of *E. rufipalpis* sent by Mr. Bates.

ARANEUS THEÏS (Walck.).

*Epeira theïs*, Walckenaer, Ins. Apt. ii. p. 53.

*Epeira moreli*, Vinson, Aranéides de Madagascar, etc. p. 166, pl. iv. fig. 4 (1863).

*Epeira eclipsis*, Marx, Proc. U. S. Nat. Mus. xvi. p. 590, pl. lxx. figs. 6 a-6 b.

This widely distributed tropical species was recorded from the Congo as *Epeira eclipsis* by Marx. The British Museum has no W. African representatives of it, but has received it in some abundance from Mashonaland (*G. A. K. Marshall*).

ARANEUS PACHANUS Poc.

*Araneus pachanus*, Poc. Ann. Mag. Nat. Hist. (7) vii. p. 447, pl. xiii. fig. 9 (1898).

*Loc.* Benito River (*G. L. Bates*). Several ♀ examples.

Previously recorded from Karagesi (*Emin Pasha*) and Ruwenzori (*Scott Elliot*).

This species presents a striking likeness, both in colour, form, and structural details, to the Oriental species that has been described as *A. decens*, *rumpfi*, *rufofemoralis*, &c. But the shape of the vulva seems to separate the African species, the scape being longer and the basal portion much more prominent beneath it.

ARANEUS HÆMATOCNEMIS, sp. n. (Plate LVI. figs. 8-8 c.)

*Colour.* Carapace either a uniform blackish brown or reddish brown above, passing into black towards the margins; upperside of abdomen either uniformly blackish brown or ornamented with yellow on the anterior half—the yellow taking the form sometimes of a median field pointed in front and behind, broadest across the shoulder region, breaking up into spots all round its margin and interrupted along the middle line by an irregular black stripe; sometimes of a sharply defined median stripe, broadest in front and constricted in the middle and at the posterior end; sometimes of a transverse recurved stripe behind the large sigilla, the extremities of which extend backward as an indistinct yellow stripe on each side circumscribing a median jet-black area which occupies the position of the folium. (In a young specimen the abdomen is testaceous, with jet-black folium and bright yellow median constricted stripe in front of it.) Sides and lower surface of abdomen black. Sternum, labium, maxillæ, and mandibles deep blackish brown; legs with coxæ and femora uniformly blackish brown; patellæ, tibiæ, and protarsi darker or lighter red, with their distal ends black, and frequently a median band; tarsi black, with narrow red basal band.

*Carapace* moderately elevated; fovea subcircular, with longitu-

dinal groove in front of it, somewhat as in *Larinia*; length of carapace exceeding that of 1st tibia, equal to that of 4th protarsus and tarsus and to patella, tibia, and half the protarsus of 3rd leg; width equal to length of 4th tibia and to 4th protarsus, less than that of 1st or 2nd tibia; median ocular tubercle prominent. Ocular quadrangle much wider in front; the posterior eyes much smaller than the anterior and nearly a diameter apart; anterior medians about a diameter apart, more than a diameter from the posterior medians and from the edge of the clypeus; eyes of anterior line when viewed from the front procurved, the upper edge of the laterals scarcely on a level with the centre of the medians; lateral eyes not quite in contact.

*Mandibles* moderately geniculate at the base; fang-groove armed with 4 anterior and 3 posterior teeth.

*Legs* armed with many strong spines; spines black at the base and apex, reddish in the median portion.

*Abdomen* heart-shaped, longer than broad, widely rounded in front, without shoulder-points, narrowly ovate behind, not surpassing spinners. *Vulva* with scape long and bent at right angles, its base as wide as the basal vertical, vestibular portion, which, when viewed from the side, is seen to send out a bitubercular prominence beneath the scape, from which it is separated by a narrow notch.

*Measurements in millimetres*.—Total length 22; length of carapace 9, width 7.2; length of abdomen 14, width 12; length of 1st leg 34, of 2nd 33, of 3rd 19, of 4th 30; patella and tibia of 1st leg 13, of 4th 11; tibia of 1st leg 8, of 4th 7.

*Loc.* Benito River (*G. L. Bates*).

Mr. Bates procured many specimens of this handsome species.

#### ARANEUS ERESIFRONS Poc.

*Araneus eresifrons*, Poc. Proc. Zool. Soc. 1898, p. 509, pl. xli. figs. 3-3b.

*Loc.* Cameroons (*H. H. Johnston*).

Previously recorded from Karagesi (*Emin Pasha*), Likipia (*J. W. Gregory*), Taru (*Steuart Betton*), and Mombasa (*D. J. Wilson*).

This species is certainly nearly allied to *A. strupifer* Simon (*Ann. Soc. Ent. France*, 1885, p. 368), which, according to Simon, occurs both in Senegal and Cape Colony.

In the specimens from the Cameroons the abdomen is frequently variegated above with sooty black, a type of coloration not observed in the East-African forms known to me.

#### ARANEUS TYLOSCAPUS, sp. n. (Plate LV. figs. 3-3b.)

*Colour*. Carapace testaceous; cephalic region with blackish spots; legs testaceous, with small black spots; patellæ, tibiæ, protarsi, and tarsi banded with black; mandibles testaceous; sternum, labium, and maxillæ infusate; abdomen olive-yellow, variegated with blackish, marked above with five transverse black lines, the anterior of which is the strongest and runs from one shoulder-point to the

other, with its convexity backwards; inferior and lateral surfaces darker than the superior, the inferior with a pair of yellowish posteriorly dilated bands running from the stigmata posteriorly towards the spinning-manmillæ.

*Eyes* of anterior and posterior line recurved when viewed from above, those of anterior line also strongly recurved when viewed from the front, the laterals standing much higher than the medians; median quadrangle a little wider than long, nearly twice as wide in front as behind, the posterior separated by a very narrow space which barely equals half their radius, the anterior separated by a space which is equal to their diameter.

*Legs* armed with numerous spines arranged in more or less definite rows; there being, for example, 6—6 on the lower side of the tibiæ and protarsi of the 1st and 2nd legs; spines black at base, pale distally.

*Abdomen* longer than wide, widely rounded in front, oval behind; with distinct black-tipped shoulder-processes, covered with short white hairs, intermixed with particoloured bristles.

Basal part of *vulva* very stout when protruded, and consisting of a right and left outer sheath, the halves of which do not meet in the middle line. Viewed from below, the two halves of the outer sheath show as a right and left rim surrounding a central pale portion, upon which rests the short but broad scape, the anterior part of which divides the rim of the right side from that of the left. The posterior end of the scape does not project so far posteriorly as the posterior border of the subjacent portion of the vulva.

*Measurements in millimetres*.—Total length 12; length of carapace 5, of abdomen 9, width of latter 7.5.

*Loc.* Benito River (*G. L. Bates*).

In the form of its vulva and other features this species is evidently related to *A. suedicola* Simon, from Arabia and (according to Pavesi) from Somaliland, to *A. mossambicensis*, Pavesi, from Mozambique, to *A. similis* and *striata*, Bösenberg and Lenz, from Quilimane, and to *A. cyrtoscapus* Poc., from the Transvaal.

ARANEUS RHINURUS, sp. n. (Plate LVI. figs. 9, 9 a).

*Colour*. Carapace olive-brown, clothed with yellow hairs; mandibles, palpi, and legs almost the same colour as the carapace; distal end of femora, tibiæ, protarsi, and the tarsi infusate, especially on the 3rd and 4th legs; upperside of abdomen chalky yellow, with dark sigilla spots and fine black line between them, also with a fine reticulated ornamentation of lines between the low pigment-spots; the tail and the lower side of abdomen black, with symmetrical bright yellow spots on each side of the spinners.

*Carapace* shorter than tibia 1, about as long as patella and tibia 4; cephalic region moderately elevated, flattish above longitudinally; ocular quadrangle almost square, scarcely narrowed in front. The eyes large and subequal, posterior medians about a



diameter apart, anterior medians a little more than a diameter apart, distance between anterior and posterior medians less than a diameter; anterior line of eyes straight or nearly so; anterior medians less than their diameter from the edge of the clypeus.

*Legs* longish, scantily spined, but furnished with long close-set bristles; the spines setiform; 1st leg much longer than 4th.

*Abdomen* flat above, heart-shaped, with rounded antero-lateral angles and anterior border, the posterior apex prolonged into a longish, stout "tail," which about equals the carapace in length; spinners in the middle of the heart-shaped basal portion of the abdomen.

*Vulva* with its basal vestibular portion not expanded, either laterally or posteriorly, at the base of the scape, which is long, slender, and slightly curled at the tip.

*Measurements in millimetres*.—Total length 9; length of carapace 2.5, of abdomen 6.5, of abdomen without tail 4, width of abdomen 3.5; length of 1st leg 12, of 4th 8.

*Loc.* Benito River (*G. L. Bates*). A single adult female.

This differs from all the Tropical African species of *Araneus* known to me in having the ocular quadrangle approximately square, with the four eyes subequal, and the extremity of the abdomen produced into a longish caudal process. In both of these features it resembles the Burmese species *A. thelurus* (Thor.), but may be at once separated from it at least by the much greater length of the scape of the vulva.

#### Genus CYTOPHORA Sim.

CYTOPHORA CITRICOLA (Forsk.).

*Loc.* Benito River (*G. L. Bates*).

Widely distributed throughout Tropical Africa and Asia.

CYTOPHORA ANGOLENSIS (Brit. Capello).

*Epeira angolensis*, Brit. Capello, J. Ac. Sci. Lisboa, i. p. 79, pl. ii. fig. 4 (1868).

*Epeira chinchoxensis*, Karsch, Zeits. gesamt. Naturwiss. lii. p. 333 (1879).

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); Benito River (*G. L. Bates*).

Recorded by Brito Capello from the Rio Quilo. Karsch's specimens from Chinchoxo appear to me to be specifically identical with those that Capello described.

M. Simon (Hist. Nat. Araignées, i. p. 775, 1895) adds this species to the synonymy of *C. citricola*. But this is undoubtedly an error, *C. angolensis*, according to my determination, being distinguishable by the posteriorly pointed abdomen and wide head, with the lateral eyes far apart from the medians. The vulva is furnished with a distinct process.

Three well-marked colour-varieties of this species are met with.

In one the upperside of the abdomen is entirely black; in a second it is also black with a bright yellow transverse stripe crossing it from shoulder to shoulder; in the third, which seems to be less prevalent than the others, the whole of the upperside behind the anterior shoulders is yellow.

CYRTOPHORA LARINIOIDES Simon.

*Cyrtophora larinioides*, Simon, Ann. Soc. Ent. France, 1894, p. 155.

Loc. Benito River (*G. L. Bates*).

Described from Ogowé.

CYRTOPHORA MARGARITATA, sp. n. (Plate LV. figs. 4, 4 a.)

*Colour* almost as in *C. unicolor* Dol., a tolerably uniform yellowish brown; the abdomen darker than the carapace and limbs, legs indistinctly variegated, sternum and lower side of abdomen blackish.

*Carapace* smooth as in *C. citricola*; eyes as in the latter species, but the laterals closer together.

*Legs* as in *C. citricola*, but with tarsi and protarsi shorter; tarsus and protarsus of 1st, for example, being distinctly shorter than patella and tibia of 1st.

*Abdomen* truncate in front, narrowly ovate behind, not lobate laterally, and only weakly bilobate posteriorly, as in *C. angolensis*; studded above with larger and smaller smooth circular bosses, very like those of *C. unicolor*, but much larger and less numerous.

*Vulva* as in figure (Pl. LV. fig. 4 a).

*Measurements in millimetres of type*.—Total length 14; length of carapace 6.5, of abdomen 9, width of abdomen 7.5; length of 1st leg 19, its patella and tibia 7, protarsus and tarsus 6.

Loc. Benito River (*G. L. Bates*).

At once recognizable from *C. unicolor* by the strong curvature of the posterior line of eyes, narrow interval between the lateral eyes, absence of tubercles on the carapace, large size of tubercles on the abdomen, &c. From the rest of the W.-African species known to me it may be at once recognized by the features mentioned in the subjoined table.

The four W.-African species of *Cyrtophora* known to me may be distinguished as follows:—

- |   |                             |
|---|-----------------------------|
| a. Abdomen long and narrow, produced in front into a longish process overhanging the base of the carapace.....                                      | <i>larinioides</i> Sim.     |
| b. Abdomen truncate in front, broadest at its anterior end.   |                             |
| a <sup>1</sup> . Abdomen without distinct shoulder prominences and no lateral prominences; its upperside studded with large circular tubercles..... | <i>margaritata</i> , sp. n. |
| b <sup>1</sup> . Abdomen with distinct shoulder prominences and one or more prominences on each side; upper-side studded with smaller tubercles.    |                             |
| a <sup>2</sup> . Abdomen with one prominence on each side behind the shoulder, posteriorly deeply bifid;  |                             |

- eyes of posterior line strongly recurved; vulva without scape..... *citricola* Forsk.  
 b<sup>2</sup>. Abdomen with two prominences on each side behind the shoulder prominence, apex of abdomen not bifid; posterior line of eyes much less strongly recurved; vulva with distinct scape ..... *angolensis* B. Cap.

### Genus ARGYROEPEIRA Emerton.

ARGYROEPEIRA UNGULATA (Karsch).

*Meta ungulata*, Karsch, Zeits. ges. Naturwiss. lii. p. 834 (1879).

Loc. Benito River (*G. L. Bates*).

This species, recorded from the Loango coast, also occurs on the eastern side of the African continent.

### Genus CYCLOSA Menge.

CYCLOSA INSULANA (Costa).

Loc. Cameroon Mountains, 4000 ft. (*H. H. Johnston*).

### Genus ACUSILAS Sim.

? ACUSILAS AFRICANUS Sim.

? *Acusilas africanus*, Sim. Hist. Nat. Araignées, i. p. 785 (1895).

Loc. Benito River (*G. L. Bates*).

The description of *A. africanus* is too brief to make sure of the correctness of the identification of the immature female of a species of this genus which Mr. Bates procured. M. Simon's example was obtained at Sierra Leone.

### ? Genus SALASSINA Sim.

SALASSINA FORMOSA (Karsch).

*Cyclosa formosa*, Karsch, Zeits. ges. Naturwiss. lii. p. 835 (1879).

Loc. Cameroon Mountains, 4000 ft. (*H. H. Johnston*).

Recorded by Karsch from the Loango coast.

According to M. Simon's division of the Cycloseæ, this species, if rightly determined, as I think is the case, falls apparently nearest to the genus *Salassina*, having the head short, the median eyes of large size and the quadrangle they form slightly narrowed in front. The tibiæ of the legs, however, are not noticeably incrassate, and there are no angular prominences on the fore part of the abdomen. The lesser recurvature of the eyes and the absence of a median series of spines from the lower side of the protarsus of the 4th leg seem to exclude the species from the allied genus *Acusilas*.

### Genus CÆROSTRIS Thorell.

CÆROSTRIS ARGOSTICTUS, sp. n. (Plate LV. figs. 5-5 b.)

*Colour.* Carapace with thoracic portion reddish above, with a silvery white patch at the sides; cephalic portion blackish, with an

oblong silvery patch of hair on the upperside between the ocular tubercle and the posterior vertical tubercles, and a silvery patch on the upperside of the lateral tubercles; mandibles deep brown; sternum bluish black, with central silvery patch; maxillæ and labium black; coxæ of legs deep brown with bluish tint; trochanters and femora red; remaining segments nearly black, with bluish lustre especially below; a white band at base of tibiæ and protarsi below, the tibial band broad only on the 1st leg, also a conspicuous white tarsal band on 4th leg; palp with femur red, the other segments blackish with white spots above. Abdomen blackish above and below, yellow at the sides anteriorly, the upperside with a vertically interrupted transverse silver band behind the anterior row of tubercles, and a series of silvery patches and lines forming a longitudinal median band extending over two thirds of the upper surface between the transverse silvery band and the posterior tubercle; sides of upper surface with narrow transverse silvery stripes; lower surface with a row of three silvery spots on each side, extending from the epigastric fold to the sides of the spinning-mammillæ.

Cephalic tubercles long, subspiniform, much longer than ocular tubercle. Length of carapace equal to width of head, including ocular tubercles, and as long as protarsus of 1st leg, shorter than protarsus and tarsus of 4th leg by at least half the length of the tarsus.

Abdominal processes normal in number, as, for example, in *C. mitralis*, and all small and tuberculiform; the bifid projection above the spinners rather prominent.

Tibiæ and protarsi of legs normally impressed above.

Vulva as in figure (Pl. LV. fig. 5 b).

Measurements in millimetres.—Total length 14; length of carapace 6, of abdomen 10, width of abdomen 11.

Loc. Benito River (*G. L. Bates*).

Easily recognizable from the S. and E. African species of the genus by the form of the vulva, and by colour, the almost complete absence of the white band at the base of the tibia on the 2nd, 3rd, and 4th legs being exceptional.

*CEROSTRIS ALBESCENS*, sp. n. (Plate LVII. fig. 16.)

Allied to the East-African *C. nodulosa* Pocock (P. Z. S. 1898, p. 514, pl. xli. fig. 7).

Hairy clothing of head mesially white, laterally golden yellow; upperside of abdomen covered with greyish-white hairs, diversified with black spots on the tubercles, sigilla, and elsewhere, and with narrow transverse black lines which laterally unite, circumscribing transversely elongate pentagonal areas; lower side of abdomen black; femora steel-blue; upperside of patella, tibia, protarsus, and tarsus covered with silvery-white hairs, and varied with pale golden yellow; extremity of protarsus of 1st and in a lesser degree of 2nd leg slightly infuscate; 3rd and 4th legs more diversified than 1st and 2nd; legs banded below as in *C. nodulosa*;



tibiæ of all with basal white band; protarsus of 1st and 3rd black, with basal band of 2nd and 4th white with black patch just beyond middle.

*Carapace* with superior and lateral tubercles longer than in *nodulosa*.

*Abdomen* (in type-specimen) not distended, its anterior portion low, nodular, not elevated.

*Vulva* (as in figure Pl. LVII. fig. 16) somewhat resembling that of *nodulosa*, the anterior portion completely divided into a right and left half by a deep median groove; the chamber containing the two fossæ smaller, more transversely oblong, with anterior rim less arched.

Total length 15.5 mm., width of head 7.5 mm.

*Loc.* Benito River (*G. L. Bates*).

*CÆROSTRIS TURRIGER*, sp. n. (Plate LVII. figs. 15, 15 a.)

*Colour.* Dorsal surface of carapace, legs, and abdomen a tolerably uniform greyish brown, covered with a coating of yellow and white hairs intermixed; abdomen mottled with black spots and brownish patches and lines; legs coloured as in *C. albescens*, but the distal spot on the protarsi reddish brown.

*Carapace* with tubercles as in *C. albescens*. Abdomen with its anterior portion elevated into a high, broad, subcylindrical prominence, the summit of which is about one third broader than long, with semicircularly rounded anterior tubercular border, and three large tubercles on the posterior border.

*Vulva* as in figure (Pl. LVII. fig. 15 a).

*Measurements in millimetres.*—Total length 16; width of head 7; height of abdomen from vulva to summit of prominence 13.

*Loc.* Benito River (*G. L. Bates*); also young specimens of probably the same species from Sierra Leone (*Surg.-Capt. Clements*).

Somewhat resembling *C. petersi* Karsch from Inhambane (Mon. Ak. Berlin, 1878, p. 324, pl. i. fig. 7), in the elevation of the anterior portion of the abdomen; but in *C. petersii* the column is narrower, with the summit rounded and not encircled with tubercles.

The three species of the genus known from the Benito River may be diagnosed as follows:—

- |  |                      |
|--|----------------------|
| a. Femora of legs bright red; tibiæ of 2nd, 3rd, and 4th legs with scarcely a trace of basal white band; black underside of abdomen ornamented with three pairs of silvery spots; upperside of abdomen velvety black, furnished with silvery lines and patches ..... | <i>argostictus</i> . |
| b. Femora steel-blue; tibiæ of 2nd, 3rd, and 4th legs with broad white basal band below; lower side of abdomen uniformly black, upperside dirty yellowish brown.   |                      |
| a <sup>1</sup> . General colour of dorsal surface of body and legs white; abdomen not elevated in front into a high thick column .....   | <i>albescens</i> .   |
| b <sup>1</sup> . General aspect dirty yellowish brown; abdomen elevated in front into a broad thick column.....  | <i>turriger</i> .    |

## Genus CLADOMELEA Sim.

## CLADOMELEA LONGIPES (Cambr.).

*Cyrtarachne longipes*, O. P. Cambridge, P. Z. S. 1877, p. 559, pl. lvi. fig. 1.

Loc. San Salvador, Congo.

## Genus GASTERACANTHA Sund.

## GASTERACANTHA CURVISPINA Guérin.

*Gasteracantha curvispina*, Guérin, Icon. Règ. Anim., Arachn. pl. ii. fig. 8, (1837).

*Gasteracantha walckenaerii*, Lucas, Thomson's Arch. Ent. ii. p. 425, pl. xii. fig. 7 (1858).

*Gasteracantha vaccula*, Thorell, Gfv. Vet.-Akad. Förhandl. xvi. p. 301 (1859); id. Eug. Resa, Zool. Arachn. p. 12 (1868).

*Gasteracantha retracta*, Butler, Trans. Ent. Soc. 1873, p. 157, pl. iv. fig. 12.

Loc. Benito River (*G. L. Bates*); Sierra Leone.

## GASTERACANTHA CONNATA Butl.

*Gasteracantha connata*, Butler, Trans. Ent. Soc. 1873, p. 168.

Loc. Old Calabar (*Gray*).

Closely allied to the Ceylonese *G. geminata* Fabr., but with no near affinity to *G. connata* Simon (Hist. Nat. Araignées, i. p. 847, 1894), which the author makes the type of section O of his subdivisions of the genus *Gasteracantha*.

## GASTERACANTHA FORMOSA Vins., subsp. NANA Butl.

*Gasteracantha nana*, Butl. Trans. Ent. Soc. 1873, p. 161, pl. iv. fig. 4.

Loc. Congo (type, without further history).

The type of this species is young.

*G. importuna* and *G. molesta*, O. P. Cambr. (P. Z. S. 1879, p. 286, pl. xxvi. fig. 1, and pl. xxvii. fig. 13), from W. Africa, are probably the adult forms.

## GASTERACANTHA BATESI, sp. n. (Plate LVI. fig. 10.)

? *Gasteracantha connata*, Simon, Ann. Soc. Ent. Fr. 1887, p. 266 (nec *G. connata*, Butl.).

*Colour.* Carapace black, with a large pale spot on each side of the median eyes; mandible shining black or red; sternum and coxæ fuscous, indistinctly variegated; legs yellowish brown, indistinctly annulated, tips of tarsi and protarsi black; upperside of abdomen yellow, with a large anterior median brown spot marked with a thin yellow stripe like an inverted T, and on each side a black spot divided by a narrow transverse yellow stripe; the rest of the upper surface variegated brown and black.

*Cephalic area* elevated behind, the middle of the elevation forming a pair of close-set tubercles.

*Legs* short; patella and tibia of 1st less than width of head.

*Abdomen* without inferior tubercle; the anterior lateral spines minute and lying far back behind the middle of the scutum and just in front of the posterior laterals, from the supporting prominence of which, however, they are separated by a rounded notch; the anterior border lying between these anterior spinules widely and nearly evenly convex, forming an almost completely semicircular arch defined by the normal 10 sigilla, of which the 4 medians form a straight transverse line; posterior lateral spines erect, very short, but borne upon the summit of a thick cylindrical prominence, the axis of which cuts that of the spines at an obtuse angle; posterior spines resembling the posterior laterals, but their axis in a line with that of the prominence and directed straight backward.

*Measurements in millimetres*.—Total length of abdomen along middle line 6; width just in front of anterior spinule 9·5; width from tip to tip of postero-lateral spine 8.

*Loc.* Benito River (*G. L. Bates*).

This species seems to form a new section of the genus *Gasteracantha*.

GASTERACANTHA (*ÆTROCANTHA*) ROGERSI O. P. Cambr.

*Gasteracantha rogersi*, O. P. Cambr. P. Z. S. 1879, p. 292, fig. 23 (♂).

*Gasteracantha* (*Ætrocantha*) *semiflava*, Simon, Ann. Soc. Ent. Fr. 1887, p. 268, pl. vi. fig. 2 (♀).

*Loc.* Sierra Leone.

Described from Assinie by M. E. Simon, and from Coanza by O. P. Cambridge.

GASTERACANTHA (*ISOXIA*) PENIZOIDES Simon.

*Isoxia penizoides*, Simon, Ann. Soc. Ent. Fr. 1887, p. 269, pl. vi. fig. 4.

*Loc.* Benito River (*G. L. Bates*).

Recorded by Simon from Assinie.

The foregoing species of *Gasteracantha* may be tabulated as follows:—

- |                  |   |                     |
|------------------|---|---------------------|
| a.               | Lower side of abdomen with large conical tubercle; spines large.  |                     |
| a <sup>1</sup> . | Anterior and median spines subequal and in contact .....  | <i>connata</i> .    |
| b <sup>1</sup> . | Anterior and median spines unequal and widely separated.  |                     |
| a <sup>2</sup> . | Spines with strong recurvature .....  | <i>curvispina</i> . |
| b <sup>2</sup> . | Spines not or scarcely recurved .....   | <i>formosa</i> .    |
| b.               | Lower side of abdomen without tubercle; spines absent or short.   |                     |
| a <sup>3</sup> . | Spines present.   |                     |
| a <sup>4</sup> . | Anterior border of abdomen widely convex; anterior spines lying far back close to and much smaller than the median spines; head tuberculate above .....                 | <i>batesi</i> .     |
| b <sup>4</sup> . | Anterior and lateral borders of abdomen cutting at right angles the anterior spines, as large as the medians and widely separated from them; head not tuberculate ..... | <i>rogersi</i> .    |
| b <sup>5</sup> . | Spines absent; abdomen widely rounded behind .....  | <i>penizoides</i> . |

## Genus ARANÆTHRA Butler.

## ARANÆTHRA CAMBRIDGEI Butl.

*Aranæthra cambridgei*, Butler, Tr. Ent. Soc. 1873, p. 175, pl. iv. fig. 8.

*Aranæthra ungari*, Karsch, Zeits. gesammt. Naturw. li. p. 322, pl. ix. fig. 1 (1878).

*Loc.* Fernand Vas River (*Du Chaillu*; type); Lagos (*Capt. Elmes*); W. Africa; Fernando Po (*Mr. Kalbreyer*); Accra (*G. A. Higlett*); Loango River (*H. L. Duggan*); Benito River (*G. L. Bates*).

## ARANÆTHRA BUTLERI, sp. n. (Plate LV. fig. 1.)

*Colour.* Carapace, mandibles, mouth-parts, sternum, and coxæ reddish yellow; patella, tibia, and tarsus of palp black; legs black, the femur of 1st and part of 2nd reddish; tibiae of 1st, 2nd, and 4th pairs with a broad basal yellow ring, the ring incomplete below on the 1st; upper and lower side of abdomen and the tips of the lateral prominences black; sigilla reddish.

*Carapace* and legs as in *A. cambridgei*. *Abdomen* of much the same form also as in that species, about twice as wide as long; the median portion of the anterior border simply emarginate, with a low tuberculiform prominence on each side; lateral portion of carapace furnished with five blunt conical lobes, one on the anterior border just in front of the antero-lateral sigillum, the posterior process lower than the others; the entire convex posterior border of the abdomen for a space which exceeds half the length of the abdomen without tubercles; abdominal integument punctured as well as striolate; sigilla very large, the six on the middle of the back arranged in a circular form, the quadrangle formed by the anterior and posterior pairs only, about twice as long as wide.

*Measurements in millimetres.*—Length of abdomen 7, width 16.

*Loc.* Benito River (*G. L. Bates*).

This interesting new species, which is dedicated to Dr. A. G. Butler, the describer of the genus *Aranæthra*, may be recognized from the typical and hitherto only known species of the genus by the following characters:—

- a. Carapace, sternum, legs, &c. a rich dark red or black colour; underside of abdomen entirely black, a black band across the fore part of the abdomen above; margin of abdomen furnished with at least 8 strong sharp spiniform processes, the posterior not very far from the posterior middle line; sigilla much smaller. *cambridgei* Butl.
- b. Carapace, sternum, coxæ, &c. reddish yellow; tibiae of 1st, 2nd, and 4th legs with a yellow band; abdomen flavous below and without anterior black band above; abdomen furnished with only 5 lateral blunt tubercles, the posterior of these being far from the middle of the posterior border; sigilla very large..... *butleri*, sp. n.



*ÆTHRODES*, gen. nov.

Allied to *Araneæthra*, but differing in the following particulars :—

- a. Four median eyes elevated on a rounded tubercle; lateral eyes also on a tubercle; clypeus equal in height to half the length of the ocular quadrangle, which is longer than broad; abdomen only overlapping the posterior third of the carapace up to the median tubercle, its anterior and lateral margins armed with smooth rounded tubercles; its upper surface furnished with about a dozen symmetrically arranged various-sized tubercles ..... *Æthrodes*.
- b. Ocular tubercles low, ocular quadrangle slightly wider than long; clypeus very low, less than half the ocular quadrangle; abdomen overlapping the posterior two thirds of the carapace, armed marginally with strong spines, without tubercles above ..... *Araneæthra*.

*ÆTHRODES MAMMOSA*. (Plate LV. fig. 2.)

*Colour* of abdomen a nearly uniform ochre-yellow; cephalothorax darker.

*Abdomen* twice as broad as its median length; its anterior border sinuous, mesially emarginate, armed with seven tubercles, not including the large tubercle on the antero-lateral angle; a large tubercle on the postero-lateral angle and two smaller lateral tubercles in front of it; the posterior border widely convex, with a series of vertical tubercles just above it and one pointed posteriorly close to the large postero-lateral tubercle; the sigilla deeply impressed and mostly subcircular; tubercles arranged as shown in Plate LV. fig. 2.

*Vulva* consisting of a semicircular depression in front and a narrow transverse plate above the genital aperture.

*Measurements in millimetres*.—Length of abdomen 12, width 22·5; length and width of carapace 7; length of 1st leg 18.

*Loc.* Benito River (*G. L. Bates*).

## TETRAGNATHA Latr.

## TETRAGNATHA CLAVIGERA Simon.

*Tetragnatha clavigera*, Simon, Ann. Soc. Ent. Fr. 1887, p. 272.

*Loc.* Benito River (*G. L. Bates*).

One female specimen referred to this species, recorded by Simon from Assinie.

## Family OXYOPIDÆ.

## Genus PEUCETIA Thorell.

## PEUCETIA LONGIPES, sp. n. (Plate LVII. fig. 17.)

*Colour* (in alcohol). Carapace pale green, thoracic portion sometimes tinted with brownish, a few black spots marking the position of setæ on the head; side of head with an indistinct or distinct vertical fuscous stripe running to the basal spot on the mandible and continued as a short stripe on the upper part of that appen-

dage, the mandibles otherwise unstriped; sternum green; legs yellow; all the segments, including coxæ and trochanters but not the tarsus, spotted with black at the base of the spines and also at the base of the large hairs on the femora, coxæ, and trochanters. Abdomen greenish; a pair of yellow stripes on the ventral surface running from the epigastric fold to the spinners, and a pair of broader stripes of the same colour on the dorsal side, separated by an elongate greenish area, which is marked in front by yellow stripes running obliquely forwards and inwards and meeting in the middle line, and behind by yellow spots or stripes continued like the anterior stripes from the lateral yellow bands.

*Clypeus* scarcely vertical, the angle it forms with the upper surface of the head slightly obtuse; carapace as long as tarsus of 1st leg, longer than patella, tibia, and tarsus of palp, a little shorter than tibia of 3rd leg, a little more than half the length of the protarsus of the 1st.

*Abdomen* long, broad in front, narrow behind, more than twice as long as broad.

*Legs* very long; the 1st more than six times as long as the carapace; 4th a little less than five times as long, armed with long black spines.

*Measurements in millimetres*.—Total length 19·5; length of carapace 6·5, of 1st leg 42, of 2nd 37, of 3rd 27, of 4th 30.

*Loc.* Loango (*in the Keyserling Collection*). Several female specimens.

Differs from all the African species known to me in the form of the vulva; further differs from *P. pulchra* Blekw. and *P. foliifera* Butl. (? = *P. striata* Karsch) in having no black bands on the front of the clypeus and mandibles, and from *P. luteiceps* Simon (Donaldson Smith, 'Unknown African Countries,' p. 391) in having the ocular area less prominent, a single black stripe at the sides of the head and upper end of the mandible.

#### Family LYCOSIDÆ.

#### Genus OCYALE Aud.

##### OCYALE ATALANTA Sav.

*Loc.* Accra (*G. A. Higlett*); Benito River (*G. L. Bates*).  
Distributed throughout Tropical Africa.

#### Family PISAUROIDÆ.

#### Genus TETRAGONOPHTHALMA Karsch.

##### TETRAGONOPHTHALMA PHYLLA Karsch.

? *Dolomedes exilipes*, Lucas, Thomson's Arch. Ent. ii. p. 385 (1858).

*Tetragonophthalma phylla*, Karsch, Zeits. gesamt. Naturwiss. li. p. 329, pl. ix. fig. 4 (1878).

*Loc.* Sierra Leone (*Surg.-Capt. Clements*); Benito River (*G. L. Bates*).

The web of this spider has been thus described by *Surg.-Capt. Clements*:—"Fig. 71 is from a photograph of a web which had a height of between 6 and 7 feet. There were some half-dozen of them built in a partially cleared space in the forest. The bottom part of the web is in the form of an inverted widely-spread funnel, the top being truncated, leaving a circular aperture of three quarters of an inch in diameter. The spider lived beneath the cone, and gained access to the upper portions of his snare by the hole in its top. Numerous threads arose from the funnel and were attached to an overhanging branch more than 6 feet above." ('*Science Gossip*,' 1893, p. 116, fig. 71.)

It appears to me to be not improbable that this species is based upon adult examples of that which *Lucas* described as *Dolomedes exilipes*.

#### Genus PHALÆA Simon.

PHALÆA FEROX, sp. n. (Plate LV. fig. 6, 6 a.)

*Colour.* Carapace ochre-yellow, sparsely clothed with yellowish hairs, with a narrow blackish-grey margin, some white hairs at the sides of the head and reddish hairs between the eyes; legs ochre-yellow, clothed with ashy-grey hairs, which become blacker towards the extremities; mandibles black, scantily clothed with yellowish-grey hairs; sternum blackish, clothed, like the maxilla and labium, with black hairs; upper surface and sides of abdomen clothed with reddish-yellow hairs, its lower surface with greyish-black hairs.

*Carapace* about one-fourth longer than broad, its length about equal to that of tibia of 2nd leg and to protarsus of 1st and 4th legs and to femur, patella, tibia, and half the tarsus of the palp; its width equal to tibia or protarsus of 3rd leg and almost equal to patella, tibia, and tarsus of palp. Cephalic region high, convexly rounded from before backwards and from side to side; ocular quadrangle much longer than wide, parallel-sided, the eyes subequal and about a diameter apart, the distance between an anterior and a posterior median of the same side equal to about two diameters, anterior and posterior laterals of either side more than twice as far apart as anterior and posterior medians; anterior and posterior laterals situated on small tubercles; anterior laterals about their own diameter above the edge of the clypeus; anterior medians about their diameter above it.

*Mandibles* long; the fang-groove armed with four teeth along its posterior edge.

*Legs* long and strong, 1, 2, 3, 4; the 1st more than four times as long as the carapace, measured from base of femur; patellæ unspined, except for a setiform spinule at the extremity of the upperside; tibiæ of 1st and 2nd armed with 4 pairs of spines below and 2 behind and 2 in front; tibiæ of 3rd and 4th with

3 pairs of inferior spines, 2 behind, 2 in front, and 1 above; femora serially spined above.

*Abdomen* oval, as wide as high, not twice as long as broad. *Vulva* as in figure.

*Measurements in millimetres*.—Total length 30; length of carapace 13, width 10; length of ocular area 3, posterior width 4; length of palpus 16, of 1st leg 52, of 2nd 51, of 3rd 39, of 4th 48; patella and tibia of 1st 19·5, of 4th 17.

The two known species of this genus, *P. canescens* and *P. vulpina* Simon (Ann. Soc. Ent. Belg. xlii. p. 10, 1898), from the Congo, are too briefly described to be identifiable. Both are smaller than *P. ferox*, *P. canescens* being 20 mm. long and *P. vulpina* 22 mm.

#### GENUS THALASSIUS Simon.

THALASSIUS GUINEENSIS (Lucas). (Plate LVII. fig. 18.)

*Olios guineensis*, Lucas in Thomson's Arch. Ent. ii. p. 405, pl. xiii. fig. 6 (1858).

♀. *Colour*. Carapace with narrow black rim, covered above and laterally with a mixture of white and brown hairs, sometimes the white predominating, sometimes the brown; no distinct white marginal or submarginal band; the clypeus the same tint as the sides of the head; abdomen a deep rich-brown or greyish brown above, darker behind than in front, covered with a mixture of whitish and reddish-brown hairs, sometimes the white, sometimes the brown predominating; ornamented with four pairs of symmetrically-disposed blood-red patches, the posterior patches often indistinct; no lateral pale band; lower surface tolerably uniform yellowish brown; legs a tolerably uniform greyish or brownish hue, not banded; the protarsus sometimes darker at the tip.

*Carapace* just about equal to tibia of 1st and to tibia and protarsus of 4th leg; longer by about one-fourth of the tarsus than metatarsus of 1st; its upper surface flat, as high behind as in front.

*Legs* robust, thickly plumose, 4, 1 and 2, 3 in length; patella and tibia of 4th a little less than those of 1st, and distinctly less than those of 2nd.

Lateral lobes of *vulva* long, oblique, converging posteriorly and meeting in a short median suture; the depression between them semioval, widely open in front, and filled in with a completely chitinous irregular sclerite (see Plate LVII. fig. 18).

♂. Resembling ♀ in colour; legs much longer, but equally strongly plumose. Palp when extended not reaching apex of femur of 1st leg; its tibia subcylindrical, unarmed; tarsus piform, shorter than patella and tibia taken together.

*Measurements in millimetres*.—♀. Total length 24; length of carapace 11, of 1st leg 42, 2nd leg 42·5, 3rd leg 39, 4th leg 44.

♂. Total length 22; length of carapace 10, of 1st leg 52, 2nd 52·5, 3rd 48, 4th 54.

*Loc.* Benito River (*G. L. Bates*).

This species has apparently not been rediscovered since Luca



described it in 1858. Hence its generic position has remained a matter of doubt.

*THALASSIUS FORMOSUS*, sp. n. (Plate LVII. fig. 19.)

♀. Resembling the preceding in its robust, thickly plumose legs, form of vulva, &c.; but differing essentially in colour. Side of carapace covered with a thick coating of yellow hairs, with a narrow brown inferior band above the black border; upperside mostly covered with deep-brown hairs, which on each side invade and break the continuity of the lateral yellow posterior area. Clypeus brown, the brown area sharply defined at the sides by the yellow hair clothing the sides of the head. Upperside of abdomen yellow and rich olive-brown, the latter arranged in distinct patterns, forming a posterior median patch, in front of which there are five transverse stripes, the anterior broader than the posterior; also small deep brown spots scattered here and there on the yellow, and the blood-red patches noticeable on *guineensis* also present. Upperside of legs yellow, banded with brown; femora with a broad basal brown band and a narrower band of the same colour, about one fourth of the distance from the apex; patella brown, slightly yellow distally; base of tibia narrowly, apex more widely brown; base and apex of protarsus and of tarsus brown.

*Measurements in millimetres.*—Total length 21; length of carapace 10, 1st leg 35.5, 2nd leg 36, 3rd leg 33, 4th leg 38.

*Loc.* Benito River (*G. L. Bates*).

Although not quite adult, the type of the species shows the same form of vulva as in subadult examples of *T. guineensis*.

*THALASSIUS INORNATUS*, sp. n.

♀. *Colour* much as in *T. guineensis*; carapace and abdomen covered with a uniform mixture of brown and yellowish-grey hairs; abdomen ornamented posteriorly at the sides with some blood-red patches running into ill-defined stripes; integument of abdomen olive-yellow, with a median anterior pale narrow lanceolate area; legs uniformly brown, covered with greyish-white hairs.

*Carapace* a little less than tibia of 1st and 4th and than protarsus of 4th leg, slightly longer than protarsus of 1st.

*Legs* much less thickly plumose than in *guineensis*; patella and tibia of 4th a little less than those of 1st.

Lower side of *abdomen* covered with short slender hairs, interspersed amongst the normal hairy coating.

Lateral lobes of *vulva* irregularly subquadrate; the inner edge longitudinally truncate and almost contiguous throughout their length, being merely separated for a short distance anteriorly by a narrow median sclerite; anterior depression of vulva marked with a pale membranous spot on each side, and on the inner side of the spot with a black, thickly chitinous ridge.

*Loc.* Benito River (*G. L. Bates*).

In colour, &c., closely resembling the Somaliland species *T. unicolor* Simon (in Donaldson Smith's 'Through Unknown African

Countries,' p. 389, 1897). The latter, however, has the lower side of the abdomen covered with setæ, which are longer and more numerous than in *T. inornatus*; there are no blood-red markings on the abdomen, and the depression of the vulva has no pale lateral spot and black ridge.

*THALASSIUS AURATUS*, sp. n. (Plate LVII. fig. 20.)

*Colour.* Carapace uniformly covered, except on the clypeus which is brown, with pale hairs, white at the sides and becoming yellowish on the summit; abdomen covered above with golden-yellow hairs and marked in its posterior half with some small symmetrical brown spots; sides of abdomen brownish red, darker above than below, lower surface bright yellowish brown; legs uniformly deep chocolate-brown.

*Carapace* as long as protarsus and one-fourth of the tarsus of the 1st leg, slightly shorter than tibia of 1st and than tibia and protarsus of 4th.

*Vulva* very like that of *T. regalis*, but the anterior depression filled in at the sides and leaving a longitudinally oblong median depression.

*Loc.* Benito River (*G. L. Bates*). A single adult female.

Recognizable from the other species by the uniform golden-yellow colour of the upperside of abdomen and carapace, and uniformly deep brown legs.

*THALASSIUS LEUCOSTICTUS*, sp. n.

*Colour* of carapace brown, with a broad yellow band on each side running from the clypeus almost to the posterior border, its upper edge tolerably even, the lower irregularly jagged on a level with the coxæ of the 2nd and 3rd legs, where the space between the stripe and the lateral margin is widest; a few small white spots on the dorsal surface of the carapace and one on each side above the anterior extremity of the stripe. Abdomen a deep rich velvety brown above, with a broad yellow stripe on each side, the stripe straight throughout its length, not geniculate, but at its posterior end irregularly jagged above, forming incipient white spots; anterior part of upper surface of abdomen with a few symmetrically arranged yellow spots; sides of abdomen below the stripe spotted with yellow; legs and palpi brown, spotted with yellow stripes above, protarsi in addition ringed with darker bands; lower side of legs, sternum, and mandibles a tolerably uniform fawn-brown; lower side of abdomen a little darker than sternum, with a few white spots at the sides.

*Carapace* shorter than the 1st and 4th tibiæ and not quite so long as the 4th protarsus, longer than the 1st protarsus; width of carapace just about equal to tibia of 3rd leg. Ocular quadrangle longer than wide, shorter than height of clypeus; posterior median eyes larger than anterior medians.

*Legs* 4, 2, 1, 3, strongly and normally spined; protarsi not very noticeably plumose.

*Measurements in millimetres.*—Total length 14; length of carapace 6·8, width 5·8; length of 1st leg 27·5, of 2nd 28, of 3rd 23·5, of 4th 29.

*Loc.* Benito River (*G. L. Bates*).

Resembling *T. spinosissimus* Karsch, from the same area, in colouring, but recognizable, according to the description of the latter, in having the legs ornamented with white transverse stripes and spots.

Although the type of this species is not quite adult, the colouring will probably be found to afford a better criterion of its specific distinction than the form of the vulva.

THALASSIUS LEONENSIS, sp. n. (Plate LVII. fig. 21.)

*Colour* a uniform reddish brown above and below; carapace and abdomen with a silvery white band extending from the sides of the clypeus almost to the spinners, the band on the carapace considerably narrower than the brown margin external to it.

*Carapace* normally high, as high behind as in front, its width equal to the area between the posterior border and the posterior lateral eye; its length equal to length of tibia or protarsus of 4th leg; slightly exceeding tibia of 1st and 2nd, width slightly exceeding tibia of 3rd.

*Vulva* practically as in *T. spenceri* F. Cambr., from Cape Colony (see P. Z. S. 1898, pl. iv. fig. 1 b), but longer as compared to its width owing to the greater length of the lateral lobes.

*Measurements in millimetres.*—Total length 21; length of carapace 9·5, width 8; length of 1st leg 35, of 2nd 35·5, of 3rd 33, of 4th 38; tibia of 4th 9·5, protarsus of 4th 9·8.

*Loc.* Sierra Leone.

The type of this species is the specimen from Sierra Leone referred by Mr. F. Cambridge to *T. spenceri*, the type of which came from East London in Cape Colony (P. Z. S. 1898, p. 30). The two specimens appear to me, however, to be specifically distinguishable. In *T. spenceri* the carapace is very slightly shorter than tibia 1 (not longer as stated in the synopsis: *loc. cit.* p. 29), and barely exceeds the 1st protarsus, and the width of the carapace is a shade less than tibia 3; the lobes of the vulva, too, are shorter and smaller.

THALASSIUS BATESI, sp. n.

General characters as in *T. leonensis*, but with yellow band on carapace and abdomen broader. Vulva differing in that the hairy lateral lobes do not meet in the middle line, but are separated in front by a median shining hairless sclerite, which is itself divided by a central longitudinal sulcus.

*Measurements in millimetres.*—Total length 22; length of carapace 9·2, width 7·5; length of 1st leg 36, 3rd 32, 4th 39; protarsus of 1st 8, of 4th 9·8.

*Loc.* Benito River (*G. L. Bates*).

Only the female known.

*THALASSIUS REGALIS*, sp. n. (Plate LVII. fig. 22.)

*Colour.* Carapace and abdomen with a pair of broad yellow bands extending from clypeus to spinners, covered elsewhere with yellowish rusty-red hairs; legs strongly banded; femora of legs yellowish red, those of 2nd pair slightly, of 3rd and 4th pairs distinctly banded with black; apex of femora, whole of patellæ, basal seventh and apical third of tibiæ, basal and apical fourth of protarsi and tarsi black; the rest of the legs yellowish red.

*Carapace* a little less than tibia of 1st leg, excelling its protarsus by about one fourth the tarsus, distinctly shorter than both tibia and protarsus of 4th. Lobes of vulva in contact along the posterior half of the inner edge, separated in the anterior half by a median heart-shaped sclerite, the depression in front of the lobes marked with two posteriorly converging black ridges.

*Measurements in millimetres.*—Total length 22; length of carapace 9, width 8; length of 1st leg 36, of 2nd 36, of 3rd 32, of 4th 38; protarsus of 1st 8, of 4th 9·8.

*Loc.* Benito River (*G. L. Bates*). An adult and an immature female.

*THALASSIUS INSIGNIS*, sp. n. (Plate LVII. figs. 23, 23 a.)

♀. *Colour.* Carapace brownish red, covered with brownish hairs speckled with white, with a black edge, within the black edge a white rim which broadens on each side of the head, the face uniformly dark, sides of thoracic portion posteriorly blackish; mandibles black with yellowish hairs; abdomen brownish above, speckled with white hairs and with white spots at the sides; lower side of abdomen, sternum, and coxæ greyish yellow. Legs variegated above; femora yellow, indistinctly variegated; patellæ yellow, blackish at the base; tibiæ yellow, black at base and apex; protarsi yellowish, also black at apex and base; tarsi yellowish; the yellowish areas of the legs covered with white hairs, the darker patches with dark hairs.

*Carapace* nearly circular, a little longer than wide, the width equal to the length from the posterior border to the anterior pair of eyes; length slightly less than protarsus of 1st leg, about equal to tibia of 3rd, width slightly shorter than tibia of 3rd; carapace low, higher in the cephalic region than posteriorly, not strongly elevated behind; clypeus scarcely exceeding the ocular quadrangle; ocular quadrangle longer than broad, slightly narrowed in front, the posterior median eyes much larger than the anterior median.

*Legs* 4, 2, 1, 3; the 1st, 2nd, and 4th subequal; patella and tibia of 1st and 2nd about equal and a little longer than those of 4th; protarsus of 4th exceeding that of 1st by about one third the length of the tarsus.

*Abdomen* broadest in its posterior half, gradually narrowed in front, abruptly narrowed behind.

*Measurements in millimetres.*—Total length 16; length of carapace 7·7, width 7·2; length of 1st leg 34, of 2nd 34·5, of 3rd 31, of 4th 35.

*Loc.* Benito River (*G. L. Bates*).



The characters of the foregoing species of *Thalassius* may be tabulated as follows:—

- |  |                      |
|--|----------------------|
| a. Carapace flatter and less elevated behind, cephalic region higher than thoracic; legs yellow, banded and spotted with black .....                           | <i>insignis.</i>     |
| b. Carapace high and more convex behind, level along upperside; cephalic area not higher than thoracic.  |                      |
| a <sup>1</sup> . A broad yellow lateral stripe extending from side of head to spinners.  |                      |
| a <sup>2</sup> . Legs yellow, strongly banded with black; patella black ..   | <i>regalis.</i>      |
| b <sup>2</sup> . Legs yellowish brown, at most spotted above with white.   |                      |
| a <sup>3</sup> . Upperside of legs ornamented with silvery white spots and bands, white spots also on upperside of abdomen above yellow band.....              | <i>leucostictus.</i> |
| b <sup>3</sup> . Upperside of legs and abdomen not spotted with white.   |                      |
| a <sup>4</sup> . Lateral lobes of vulva in contact, not separated mesially by a shining hairless sclerite .....  | <i>leonensis.</i>    |
| b <sup>4</sup> . Lateral lobes of vulva separated posteriorly in the middle line by a shining hairless sclerite .....  | <i>batesi.</i>       |
| b <sup>1</sup> . No definite longitudinal yellow band extending from head to spinners.   |                      |
| a <sup>5</sup> . Legs robust, thickly plumose distally; lateral lobes of vulva elongate, obliquely converging, and meeting posteriorly in a very short suture. |                      |
| a <sup>6</sup> . Legs and upperside of abdomen strongly banded; clypeus darker than side of head .....   | <i>formosus.</i>     |
| b <sup>6</sup> . Legs and abdomen not banded; clypeus same colour as sides of head .....   | <i>guineensis.</i>   |
| b <sup>5</sup> . Legs thinner, not thickly plumose; lateral lobes of vulva subquadrate, meeting or nearly meeting in a long median suture.                     |                      |
| a <sup>7</sup> . Upperside of thorax and abdomen nearly uniformly golden yellow; legs chocolate-brown .....  | <i>auratus.</i>      |
| b <sup>7</sup> . Upperside of thorax and abdomen covered with brown and yellow hairs; legs pale, covered with greyish-white hairs .....                        | <i>inornatus.</i>    |

The following West-African species are unknown to me:—

*T. spinosissimus* Karsch (Zeits. gesamt. Naturwiss. lii. p. 345, 1879), described as a *Ctenus* from the Loango coast, will fall apparently under section b<sup>1</sup> of the above table; but seems to differ from both *T. batesi* and *T. leonensis* in having the brown field of the upperside of the abdomen laterally spotted with white, perhaps as in *T. leucostictus*. The description, however, contains no statement to the effect that the legs are ornamental as in *T. leucostictus*.

*T. pictus*, Simon (Ann. Soc. Ent. Belg. xlii. p. 17, 1898), from Ogowé, will according to colour characters fall under section a or a<sup>6</sup>, resembling *T. insignis* in some respects; but since M. Simon makes no mention of any peculiarity in the form of the carapace, it is not permissible to suppose that his species is identical with *T. insignis*.

#### Genus DOLOMEDES Latr.

DOLOMEDES TRANSFUGA, sp. n. (Plate LVII. fig. 24.)

♂. Colour a tolerably uniform yellowish brown; carapace covered above with olive-brown hairs, with a broad marginal snow-white

band extending from middle of clypeus to side of posterior emargination. Upperside of abdomen covered with short hairs of a rusty-red hue; a snow-white lateral band set off above and below by a narrow darker stripe; legs and ventral surface not varied.

*Carapace* nearly circular, its width equal to the length of its upper surface from posterior median eyes to posterior emargination; its upper surface posteriorly elevated, a little higher than cephalic region; length a little less than tibia of 3rd and a little greater than the tarsus of 4th leg, a little excelling half the length of the patella and tibia of 1st and 4th. Eyes of anterior line a little recurved; laterals much smaller than centrals, their upper edges in a straight line; anterior line noticeably wider on each side than line of posterior medians, the latter much larger than anterior medians; ocular quadrangle less than height of clypeus, much wider behind than in front, its posterior width exceeding its length. Inferior border of mandible armed posteriorly with 4 teeth.

*Legs* long and slender, 4, 1, 2, 3 in length; patella and tibia of 1st and 2nd subequal and a little shorter than of 4th; protarsus of 4th equal to protarsus and one third of tarsus of 1st; patella armed with 3 spines, one on each side and one median apical; tarsi not scopulate, thickly setose below.

*Palp* extending past middle of tibia of 1st leg; tibial segment longer than patella, distally incrassate, armed externally with a crescentically upcurved pointed spine, and on the inner side with a short quadrate lightly emarginate buttress; tarsus about as long as patella and tibia, short in its basal half, subcylindrical distally.

*Measurements in millimetres*.—Total length 21; length of carapace 18.3, width 9; length of 1st leg 56, of 2nd 54, of 3rd 48, of 4th 60.

*Loc.* Benito River (*G. L. Bates*). An adult male and an immature female.

In this description some characters considered to be of generic value have been repeated to substantiate the claim of the species to be ranked in the genus *Dolomedes*. This genus is, according to Simon, replaced in Tropical Africa by the allied form *Tapinothele*, which has been recorded from Zanzibar (*Hist. Nat. Araignées*, i. pp. 310 & 313, 1898). But the species here named *transfuga* does not appear to differ in any important particulars from the genus *Dolomedes* as characterized by Simon, and certainly does not fall into the genus *Tapinothele*.

## Family CTENIDÆ.

### Genus CTENUS.

CTENUS BURTONI F. Cambr.

*Ctenus burtoni*, F. Cambr. Proc. Zool. Soc. 1898, p. 25, pl. iii. figs. 3 a-f.

*Loc.* Cameroons (*Capt. Burton*); Benito River (*G. L. Bates*).

This species is apparently nearly allied to *Phoneutria capulina* Karsch, the colour of the mandibles being apparently the same in the two species and both of them possessing the beard-like fringe of hair on the lower side of the legs, upon which Karsch lays so much stress. Fortunately the question can be without difficulty settled by a comparison between the palpus of *C. capulinus* and the figures of that of *C. burtoni* which Mr. Cambridge has published.

CTENUS OCCIDENTALIS F. Cambr.

*Ctenus occidentalis*, F. Cambr. Proc. Zool. Soc. 1898, p. 22.

Loc. W. Africa (without further history).

CTENUS KINGSLEYI F. Cambr.

*Ctenus kingsleyi*, F. Cambr. Proc. Zool. Soc. 1898, p. 21, pl. iii. fig. 6.

Loc. Cameroons (*Miss Kingsley*).

CTENUS SCOPULATUS, sp. n. (Plate LVII. fig. 25.)

*Colour.* Carapace deep mahogany, clothed with short reddish-brown hairs, hairs on the face and upper half of mandible deep carmine; mandibles shining black: legs same colour as carapace above; femora redder below, especially the base of the 1st and 2nd in front; scopulæ greyish black. Abdomen indistinctly variegated black and red above, the sides especially in front clothed with bright reddish hairs interspersed with longer hairs of a paler tint; the lower surface behind the epigastric fold entirely covered with a broad velvety-black field, narrowed and oval behind and sharply marked off at the sides by the red hairs of the lateral surface and in front by the reddish-yellow epigastric region; sternum and coxæ blackish brown.

*Carapace* longitudinally horizontal above, a little shorter than palp measured from base of femur, longer than patella and tibia or than tarsus and protarsus of 3rd leg, a little shorter than 4th protarsus, just about equal to protarsus and tarsus of 2nd; its width just about equal to tibia of 2nd and of 4th; ocular quadrangle longer than wide, narrowed in front, exceeding height of clypeus, which nearly equals three diameters of anterior median eyes.

*Legs* 4, 1, 2, 3; tibiæ of 1st and 2nd with 5 pairs of inferior spines, not spined above, of 3rd and 4th with 3 pairs and 2 anterior and 2 posterior spines and 3 superior spines; patellæ of 1st and 2nd unspined, of 3rd and 4th with 1 anterior and 1 posterior spine; tibiæ of 1st and 2nd scopulate below, of 3rd scopulate below at its distal end; protarsus of 4th scopulate except in the basal fourth of its length; protarsi of 1st and 2nd without inferior apical spine.

*Vulva* consisting of a reddish, heart-shaped, convex, median sclerite, with a small shining black dentiform process on each side of its posterior extremity.

*Measurements in millimetres.*—Total length 31; length of carapace 15, width 12; length of palp 17, of 1st leg 50, of 2nd leg 47, of 3rd leg 38, of 4th leg 51; patella and tibia of 1st leg 26, of 4th 17, protarsus of 1st 12, of 4th 16.

*Loc.* Benito River (*G. L. Bates*).

Rivalling the preceding species, *C. kingsleyi* and *C. occidentalis*, in size, and resembling them in the absence of the inferior apical protarsal spine of the 1st and 2nd leg; but at once recognizable from both by its coloration, especially of the lower surface of the abdomen. It further resembles *C. kingsleyi* in having the carapace shorter than the 4th protarsus and very much in the form and size of the vulva, but differs from it and approaches *C. occidentalis* in having the carapace longer than the patella and tibia of the 3rd leg.

The black patch on the lower side of the abdomen in *C. scopulatus* calls to mind the somewhat similar colouring found in *Phoneutria melanogastra* of Bösenberg and Lenz (J.B. Hamburg. Mus. xii. p. 12, pl. i. fig. 14), from East Africa; but the two species are certainly quite distinct, seeing that *P. melanogastra* is less than half the size of *C. scopulatus* and has a median pale stripe on the carapace. And lastly from Simon's species *C. erythrochelis* from Landana (Bull. Soc. Zool. France, i. p. 222), which also has red hairs on the base of the mandible, *C. scopulatus* may be recognized by the absence of pale bands on the carapace and the presence of the black field on the lower side of the abdomen.

*Ctenus auricularis* and *C. capulinus* of Karsch, from Chinchoxo, also seem to differ in colour from *C. scopulatus*, as well as from *C. occidentalis* and *C. kingsleyi* (see Zeits. gesamt. Naturw. lii. pp. 347–348, 1879).

*CTENUS RIVULATUS*, sp. n. (Plate LVII. figs. 26, 26 a.)

♀. *Colour.* Carapace covered with blackish or olive-brown hairs, with a median pale golden stripe, and a broad irregular interrupted submarginal band extending from the sides of the clypeus to the posterior border; upperside of abdomen ornamented with a median golden-yellow or greyish band, narrow in front and indented at the sides with four pairs of large black spots; sides of abdomen blackish, mottled with yellow or grey spots; on the lower side the pale spots are arranged in definite longitudinal posteriorly converging lines; sternum, coxæ, and lower side of legs uniformly deep brown; upperside of legs varied, especially on the femora, with golden-yellow bands, the rest of the segments tinted with yellow; palpi uniformly dull brown; mandibles black in front, without bright coloured base.

*Carapace* slightly elevated above behind the fovea, as long as patella+tibia of 3rd leg, as tibia of 1st, and a little longer than protarsus of 1st and than tibia of 4th, about four fifths of the protarsus of the 4th; ocular quadrangle more narrowed in front than in *C. scopulatus*, its eyes relatively larger, the anterior separated by a space which about equals the radius.

*Legs* 4, 1, 2, 3; patella+tibia of 4th a little less than of 1st



and a little more than of 2nd; protarsi of 1st and 2nd legs without inferior apical spine; tibia of 1st lightly scopulate.

*Fulva* consisting of a median red sclerite, shaped like the ace of spades, as broad as long, its anterior border with a median forwardly directed prominence and convex sides; the lateral tooth less prominent than in *C. scopulatus*.

♂. Similar in colour to ♀, legs much longer (*cf.* measurements). Legs not fringed as in *C. burtoni* and *C. capulinus*; tibial spur of palpus long, viewed from above diverging externally, then turned forwards at apex; seen from the outside aspect, the upper edge is nearly straight, the lower concave, with the apex strongly bifurcate, the upper branch of the fork slightly hooked apically, the lower truncate with acute inferior angle; tarsus with only a small tuberculiform prominence at base on outer side.

*Measurements in millimetres.*—♀. Total length 26; length of carapace 12, of 1st leg 44, 2nd 49, 3rd 34, 4th 47.5.

♂. Total length 20; length of carapace 11, of 1st leg 57, 2nd 50, 3rd 41, 4th 57.

*Loc.* Benito River (*G. L. Bates*).

CTENUS (LEPTOCTENUS) AGILIOR, sp. n. (Plate LV. fig. 7.)

♂. *Colour.* Carapace with pale median band constricted just behind the head, laterally infusate, paler above the border, area around eyes black; mandibles pale, infusate externally; palpi and legs pale, obscurely banded with greyish black; upperside of abdomen clothed with olive-yellow hairs, and diversified with red and black marking; underside flavous.

*Carapace* with a deep depression behind the head; head and posterior portion elevated; clypeus narrower than anterior median eyes.

*Legs* very long and slender; tarsal and protarsal scopulae very scanty; tibia of 1st armed with 4 anterior and 4 posterior spines and with 6 pairs of inferior spines; protarsus of 1st with 3 pairs of inferior spines, and with 1 anterior and 3 posterior spines; patellae spined in front and behind.

*Palp* with tibia longer than patella, and furnished externally with a large bifid prominence, of which the upper branch is longer and sharper than the lower; base of tarsus above furnished with a conical process; tip of tarsus prolonged and subcylindrical; tarsus not so long as patella and tibia taken together (for structural details of tarsus see Pl. LV. fig. 7).

*Measurements in millimetres.*—Total length 10; length of carapace 5, of palpus 9, of 1st leg 33, 2nd 29, 3rd 24, 4th 37; tibia of 1st 10, of 4th 9.

*Loc.* Benito River (*G. L. Bates*). A single adult ♂ example.

M. Simon has recently described two species of *Ctenus* (*Leptoctenus*) from West Africa, namely *C. (L.) lycosinus* and *C. (L.) aculeatus*, both from the Rio Pungo (Ann. Soc. Ent. France, 1897, pp. 493-4). Both are based upon females, and are not comparable with the male described above. From *C. (L.) modestus* (*id. loc.*

*cit.* p. 492) from Zanzibar, of which the male is known, *C. (L.) agilior* certainly differs in having the tibia of the palp longer than the patella and both together longer than the tarsus, and in the form of the tibial apophysis, which is described as acute and erect.

Family HETEROPODIDÆ.

Genus SELENOPS Latr.

SELENOPS ANNULATUS Simon.

*Selenops annulatus*, Simon, Bull. Soc. Zool. Fr. i. 1879, p. 15.

*Loc.* Benito River (*G. L. Bates*). Recorded from Chinchoxo.

The following species from the Congo Region may be identical with the preceding:—

*S. sector*, Karsch, Zeits. ges. Naturw. 1879, p. 342.

*S. büchneri*, id. Berl. ent. Zeits. xxv. p. 94 (1881).

*S. brownii*, Marx, P. U. S. Nat. Mus. xvi. p. 589 (1893).

Genus TORANIA Simon.

TORANIA OCCIDENTALIS (Simon).

*Isopeda occidentalis*, Simon, Ann. Soc. Ent. France, 1887, p. 264.

*Loc.* Benito River (*G. L. Bates*), Accra (*G. A. Higlett*); Afram Plain, inland of Ashanti.

Recorded by Simon from Assinie.

TORANIA VARIATA, sp. n. (Plate LVIII. figs. 30–30*d.*)

♀. *Colour.* Carapace castaneous, clothed with ashy-grey hairs, with a thickened white stripe along the posterior slope, the white emphasized by a conspicuous bicrescentic black stripe in front and a pair of narrower black stripes behind; ocular area black; clypeus clothed with white hairs; mandibles nearly black, clothed with greyish hairs above; maxillæ and labium black; palpi clothed with grey hairs, mottled with black, tarsi fuscous; legs grey, mottled with black above; femora with three largish black spots above, ashy black below, those of the posterior pairs paler than the others; patellæ black beneath; tibiæ white at base and apex below, black in the middle; scopulæ blackish grey; sternum testaceous; coxæ also testaceous, those of first three legs and of the 4th slightly black in front; abdomen mottled ashy grey above, with a strong transverse sinuous black stripe in the posterior fourth of its length and irregular blackish patches at the sides and smaller spots in the middle; lower side of abdomen yellowish grey, with four narrow blackish longitudinal lines.

*Carapace* as broad as long, not quite so flat as in *T. occidentalis*, as long as tibia of 1st leg and as protarsus and half the tarsus of the 4th leg, a little longer than patella, tibia, and tarsus of palp. *Eyes* of posterior line recurved; distance between medians less than

between medians and laterals; eyes of anterior line with superior edges on a level, the laterals nearly twice the diameter of the medians, at all events much larger; ocular quadrangle longer than wide, parallel-sided, the anterior eyes considerably larger than the posterior and closer together.

*Mandibles* weakly geniculate basally; inferior edge with 4 teeth behind, 2 in front.

*Legs* 2, 1, 3 and 4; 2nd excelling 1st by length of its tarsus; spine-armature as in *T. occidentalis*, but with anterior spine on all the patellæ and a posterior on all the patellæ but that of 4th leg.

*Vulva* as in *occidentalis*, consisting of an anterior central depression followed by a pair of subcircular lobes separated in the middle line by a median groove (Plate LVIII. fig. 30*d*).

♂. Resembling ♀, but less vividly coloured and with longer legs; carapace equal to length of tibia of 3rd leg; palpal organ as in figure (Plate LVIII. figs. 30*b*–30*c*); the tibia with a pair of strong subequal external spurs.

*Measurements in millimetres*.—♀. Total length 18; length of carapace 8, of 2nd leg 36, 4th leg 28.

♂. Total length 16.5; length of carapace 8, of 2nd leg 42, of 4th leg 33.

*Loc.* Benito River (*G. L. Bates*).

This species and the foregoing may be at once distinguished as follows:—

- |   |                          |
|---|--------------------------|
| a. Larger, up to 30 mm. or over; anterior median eyes scarcely smaller than anterior laterals; sternum black; coxæ of 1st and 2nd legs deep blackish brown; femora with exception of the 1st, which has a black basal spot, yellowish red beneath ..... | <i>occidentalis</i> Sim. |
| b. Smaller, barely 20 mm. in length; anterior median eyes much smaller than anterior laterals; sternum testaceous; coxæ of 1st and 2nd legs infusate only in front; femora of legs, especially of 1st and 2nd pairs, ashy black beneath .....           | <i>variata</i> , sp. n.  |

### Genus REMMIUS Simon.

#### REMMIUS VULTUOSUS Simon.

*Remmius vultuosus*, Simon, Ann. Soc. Ent. France, 1896, p. 484.

*Loc.* Benito River (*G. L. Bates*).

#### ? REMMIUS VULPINUS Simon.

*Remmius vulpinus*, Simon, Ann. Soc. Ent. France, 1896, p. 485.

*Loc.* Benito River (*G. L. Bates*).

A single immature female doubtfully referred to this species.

### Genus SPARASSUS Latr.

SPARASSUS BENITENSIS, sp. n. (Plate LVI. figs. 12, 12*a*, & Plate LVIII. fig. 27.)

♀. Colour of carapace a uniform ochre-yellow, clothed with

yellow hairs; mandibles, maxillæ, and labium mahogany-brown; sternum and legs much the same colour as the carapace; femora redder below, indistinctly spotted above; protarsi covered above with a clothing of greyish hairs, the rest of the segments scantily hairy; abdomen covered with brightish yellow hairs, marked above and at the sides with short darker stripes and with a darker median longitudinal stripe emphasized by three pairs of black spots; dark blackish brown over the spinners.

*Carapace* a little longer than tibia of 4th leg, equal to the length of its protarsus, a little longer than patella, tibia, and tarsus of palp, and a little shorter than protarsus and tarsus of 3rd leg; its width about equal to tibia of 4th leg, and to patella, tibia, and tarsus of palp.

*Eyes* of posterior line subequally spaced, space between the medians almost equal to twice their diameter; ocular quadrangle parallel-sided and about as long as wide; the anterior median eyes a little larger than the posterior median, about a diameter apart, less than a diameter from the anterior laterals, which they equal in size and with which they are in the same straight line; clypeus less than diameter of anterior median eye.

*Legs* long and slender; tibiæ of legs armed with 11 spines, the odd spine being in the dorsal middle line; patellæ armed with an anterior and a posterior spine; protarsi of 1st and 2nd scopulate to the base, of the 2nd less closely than of the 1st; basal portion of 3rd scarcely scopulate; 4th protarsus only scantily scopulate in its distal half.

*Vulva* as in figs. 12, 12a, Plate LVI.

*Measurements in millimetres.*—Total length 14; length of carapace 6, width 5.5; length of 1st leg 28, of 2nd 29.5, of 3rd 20, of 4th 23.5; patella and tibia of 1st 10.5, of 4th 8.

♂. *Colour.* Carapace yellow, clothed with ferruginous hairs and mottled with white bands and spots; legs mottled with white blotches and bands; upperside of abdomen variegated with white and olive-green hairs.

*Carapace* distinctly longer than broad, the length a little less than tibia of 3rd and than half patella + tibia of 1st leg. Eyes of posterior line practically straight; anterior medians about half their diameter apart and a little nearer to the laterals, which are distinctly smaller.

*Legs* moderately long; 2nd surpassing 1st by barely half its tarsus; 3rd slightly surpassing tibia of 2nd and middle of protarsus of 4th; 2nd a little less than six times, 4th a little less than five times, as long as carapace; tibiæ with a pair of apical inferior spines; patellæ with anterior and posterior spine.

*Palp* with tibia considerably longer than patella, armed with 5 long spines; the apophysis short at the base, its distal portion bent downwards nearly at right angles and forming a slender spiniform process; tarsus oval, about as long as patella and tibia.



*Measurements in millimetres.*—Total length 13; length of carapace 6, width 4·8; length of 1st leg 33, of 2nd 34, of 3rd 22·5, of 4th 28; patella and tibia of 1st 12·5, tibia of 3rd 6.

*Loc.* Benito River (*G. L. Bates*).

*SPARASSUS BATESI*, sp. n. (Plate LVIII. fig. 29.)

♀. *Colour.* Carapace, sternum, palpi, and legs flavous, less darkly coloured distally, with blackish-grey scopulæ on the protarsi and tarsi; tarsus of palp also with blackish-grey scopulæ; mandibles black; abdomen golden yellow, intermixed with brown, with transverse darker stripes passing outwards from the middle line; sides of abdomen golden yellow, indistinctly mottled; lower side of abdomen yellow.

*Carapace* high, about as long as broad; cephalic region strongly convex from side to side and from behind forwards; width of head almost equal to its length measured from the anterior end of the fovea; eyes more widely spaced than in *S. benitensis*; the ocular quadrangle distinctly narrowed in front.

*Mandibles* with 4 teeth behind and 2 in front.

*Legs* as in the preceding species, but without patellar spines and with only two pairs of spines on lower side of tibia.

*Vulva* as in fig. 29, Plate LVIII.

*Measurements in millimetres.*—Total length 14; length of carapace 6, width 5·9; width of head 4; length of 1st leg 26, of 2nd 28, of 3rd 19·5, of 4th 23.

*Loc.* Benito River (*G. L. Bates*).

*SPARASSUS TRIFURCATUS*, sp. n. (Plate LVIII. fig. 28.)

♂. *Colour.* Integument pale olive-yellow, clothed with hairs of a golden-yellow hue; mandibles pale; tarsus of palp infusate.

*Carapace* high, convexly rounded, a little longer than broad, its length nearly equal to tibia of 3rd leg and to half the patella and tibia of the 1st. *Eyes* of posterior line very slightly recurved, subequal, subequally spaced, the medians a little less than two diameters apart; eyes of anterior line straight by their centres, medians larger than laterals, half a diameter apart and a little more than that from the laterals.

*Legs* 2, 1, 4, 3; 2nd surpassing 1st by a little more than its tarsus, 3rd barely surpassing tibia of 2nd and not reaching tip of protarsus of 4th; 2nd leg only a little more than five times as long as the carapace, the 4th rather more than four times; patellæ of 1st, 2nd, and 4th with an anterior spine; no apical spines on under side of tibiæ.

*Palp* with tibia a little longer than patella, both without spines; tibial apophysis consisting of 3 strong teeth, the upper the thickest, obliquely truncate apically, and ending in a sharp point, the inferior shorter and thinner than the rest; tarsus elongate oval, about as long as patella + tibia taken together.

*Measurements in millimetres.*—Total length 13; length of carapace

6·5, width 5·8; length of 1st leg 31·5, of 2nd 35, of 3rd 24, of 4th 28; patella + tibia of 1st leg 12, tibiæ of 3rd 6.

*Loc.* Cameroons.

*SPARASSUS RUFILATUS*, sp. n. (Plate LVI. figs. 13, 13*a*.)

♂. *Colour* much as in *S. trifurcatus*, except that the legs are more orange-red, though the bases of the femora remain pale; the upper-side of the abdomen studded with dark reddish-brown spots and the lower side behind the epigastric fold uniformly pinkish brown.

*Carapace* very slightly longer than wide, less than tibia of 3rd and than half the patella + tibia of 1st leg.

*Eyes* of posterior line slightly procurved, subequal and subequally spaced; eyes of anterior line closer together, equally spaced, distance between medians about half their radius.

*Legs* very long, 2nd surpassing 1st by its tarsus and one third of its protarsus; 2nd leg about seven times as long as carapace. Tibia without apical inferior spines; patellæ unspined.

*Palp* with tibia cylindrical, much longer than patella, and armed internally with a single long spine; patella unspined; tibial apophysis consisting of a forwardly directed spur, the apex of which is pointed and hooked; tarsus very large, its external edge concave, internal convex; palpal organ constructed as in fig. 13, Plate LVI.

*Measurements in millimetres.*—Total length 14; length of carapace 6·5, width 6; length of 1st leg 40, of 2nd 45·5, of 3rd 29, of 4th 33; patella + tibia of 1st 14·8, tibia of 3rd 7·8.

*Loc.* Cameroons.

The females of the foregoing species may be recognized as follows:—

- a. Head narrower, its width only equal to the length between the anterior end of the fovea and the posterior line of eyes; eyes closer together, the ocular quadrangle scarcely narrowed in front; mandibles reddish brown; tibia with 3 pairs of inferior spines; patellæ at least on 2nd and 3rd legs spined in front and behind ..... *benitensis*, sp. n.
- b. Head broader, its width almost equal to the entire length measured from the apex of the fovea; eyes more widely spaced, the ocular quadrangle distinctly narrower in front; mandibles black; tibiæ with two pairs of spines beneath; patellæ unspined ..... *batesi*, sp. n.

The males of the species here described may be determined as follows:—

- a. Tibial process of palp trifurcate (tibiæ of legs without inferior apical spines; 2nd leg a good deal longer than 1st, and only a little more than five times as long as carapace; patella and tibia of palp without spines) ... *trifurcatus*, sp. n.
- b. Tibial process of palp simple, undivided.
  - a'. Tibial process stout at base, its distal half slender and bent downwards almost at right angles; tibiæ of legs with two pairs of inferior spines; 2nd leg only a little longer than 1st, and less than six times as long as carapace; tibia of palp strongly spined ..... *benitensis*, sp. n.

- b<sup>1</sup>. Tibial process of palp stout, straightish, hooked at apex; tibiæ of legs with 3 pairs of spines; 2nd leg considerably longer than 1st and about seven times as long as carapace; tibiæ of palp with only 1 spine... *rufilatus*, sp. n.

*Sparassus (Olios) alluaudi* Simon (Ann. Soc. Ent. Fr. 1887, p. 264), from Assinie, resembles *S. batesi* in certain characters, for example in having the carapace as wide as long and the mandibles black; but according to Simon the eyes of the anterior line are procurved in *S. alluaudi*, whereas they are straight in *S. batesi* and the upperside of the abdomen is ornamented with a longitudinal, lanceolate fuscous band.

#### PALYSTODES, gen. nov.

*Carapace* about one-third longer than wide, rather low, moderately convex, flat above longitudinally; the cephalic area not raised. *Eyes* of posterior line nearly equidistant, very slightly recurved, the medians larger than the laterals, which are sessile; those of anterior line also equidistant, their lower edges on a level, the medians much smaller than the laterals, their diameter less than the radius of the latter; clypeus low, less than the diameter of anterior medians; quadrangle of median eyes much longer than wide, wider behind than in front, the eyes subequal.

*Mandibles* armed below with 3 teeth in front and 3 behind.

*Legs* 1, 2, 4, 3, completely laterigrade, very long and slender.

Recognizable from *Palystes*, to which it is most nearly related, by having the carapace narrower and its upper surface flat from the eyes to the posterior end of the thoracic fovea. In *Palystes* the carapace is strongly convex longitudinally.

PALYSTODES PLUMOSUS, sp. n. (Plate LVIII. figs. 31, 31a.)

♂. *Colour*. Carapace castaneous, covered with a coating of brownish hairs, mottled with darker and lighter patches; mandibles deep mahogany, clothed with mottled greyish-yellow hairs; labium and maxillæ black; sternum black, striped with red bands, which cross it transversely on a level with the coxæ; coxæ covered with rich yellowish-red hairs, black in front; legs blackish, femora spotted with white below, white spotted with black above, with tufts of brownish hairs in front; patellæ white below; tibiæ with two white stripes below, one median and one apical; upperside of tarsi and protarsi brownish, mottled with tufts of hair; scopulæ of tarsi and protarsi rusty red; the colouring of the 4th leg less distinctly marked than that of the others; apex of femora, tibiæ, and protarsi, especially of 4th leg, with short tufts of hair, somewhat as in some species of *Pandercetes*; palpi black, mottled above, the hairs more uniformly flavous below; tarsus covered with ferruginous hairs, fuscous apically below. Abdomen mottled with greyish-yellow above, with tufts of brown hairs, a short anterior median black stripe, and on each side of the middle line a large semi-circular black stripe, the anterior and posterior ends of which

are almost in contact in the middle line, the former just in front of the middle of the upper surface, the latter a little distance in front of the spinners; lower side of abdomen covered with a broad undivided field of deep rich, nearly blood-red hairs, a narrow arched transverse black stripe behind the epigastric fold; the epigastric region blackish, relieved, especially posteriorly, with golden-yellow hairs; sides of abdomen above the red field greyish, mottled with red anteriorly.

*Carapace* equal to length of 4th tibia and 3rd femur, width equal to about half the length of protarsus and tarsus of 2nd leg.

*Legs*—spines of 1st and 2nd femora, 3, 2, 3; of 3rd, 2, 2, 3; of 4th, 3, 2, 2; 1st and 2nd patellæ, 1, 1; of 3rd and 4th, 1 anterior; tibiæ, 2, 2, 2 below, 2 in front, 1 above, and 2 behind; protarsi, 2, 2 below, 2 behind, 3 in front; tibiæ of 1st and 2nd sinuous; femora of 1st and 4th equal; 1st leg nearly five times as long as carapace, 3rd leg about three and half times as long, 4th about four times as long.

*Abdomen* more than one third longer than broad, voluminous, broadest just behind the middle, then narrowed abruptly to its termination.

*Vulva* consisting of a transversely oval pit, followed by a pair of skeletal pieces separated by a narrow median sclerite.

*Measurements in millimetres*.—Total length 25; length of carapace 11, width 8; length of 1st leg 56, of 2nd 52, of 3rd 39, of 4th 48 (all measured from base of femur); patella and tibia of 1st 21, of 4th 16; protarsus of 1st 14, of 4th 12.

*Loc.* Benito River (*G. L. Bates*).

### Family THOMISIDÆ.

#### Genus PHRYNARACHNE Thorell.

##### PHRYNARACHNE RUGOSA (Latreille).

*Thomisus rugosus*, Latreille, Nouv. Dict. d'Hist. nat. xxxiv. p. 62.

*Thomisus foka*, Vinson, Aranéides Madagascar, &c. p. 69, pl. xiv. fig. 4 (1863).

*Loc.* Benito River (*G. L. Bates*).

The specimen of *Phrynarachne* obtained by Mr. Bates seems identical with an example in the British Museum from Madagascar.

##### PHRYNARACHNE MARMORATA, sp. n. (Plate LVI. fig. 14.)

♀. *Colour*. Carapace with a large jet-black patch on each side of the thoracic portion; the margins yellowish brown and the middle line clearer yellow; head infusate, the ocular tubercles amber-yellow, a yellowish-white band passing from the median eyes to the lateral angles of the clypeus; upper portion of mandible yellowish white, lower portion infusate; basal half of palpi yellowish white, tibia and tarsus infusate; legs of 1st and 2nd



pairs with coxæ, trochanters and femora, patellæ, and basal half of tibiæ yellow, clouded or marbled with black; distal half of tibiæ and protarsi black, slightly variegated with yellow, tarsi yellow; 3rd and 4th legs black, with tarsus and basal half of femur yellow, and the rest of the segments varied with yellow marks; sternum yellow, clouded with black; upperside of abdomen black in its anterior half, with a median yellow stripe, the posterior half reddish brown in the middle, jet-black on the posterior angles; a large yellowish-green triangular patch spreading in from the sides in front of the posterior angles; sides of abdomen whitish yellow; ventral surface yellowish brown, varied with black markings.

*Carapace* a little excelling tibia of 1st leg in length; flat above, not elevated posteriorly as in *rugosa*, the tubercles high and conical; eyes of anterior line a little more recurved; median ocular quadrangle more narrowed anteriorly than in that species.

*Legs* longer than in *rugosa*; the tibia of 1st and 2nd pairs more strongly bowed; tubercles on femora larger; spines on protarsi more numerous and longer, those on upperside of the segment forming a distinct long pectinated series, which distally largely overlaps the base of the tarsus.

*Abdomen* widest along its posterior border, which is truncate; width across the middle less than the length; width across posterior angles exceeding the length; tubercles large and conical, not low as in *rugosa*.

*Vulva* consisting of a median anteriorly narrowed piriform lobe, lodged in a depression bounded by a semicircular border.

*Measurements in millimetres*.—Total length 9; length of carapace 4.2, width 3.8; length of abdomen 5, width posteriorly 6.

*Loc.* Benito River (*G. L. Bates*).

Easily recognizable from *P. rugosa* by the variegated colouring, stronger tuberculation, longer anterior legs, &c.

### Genus THOMISUS Latr.

#### THOMISUS TRIPUNCTATUS Lucas.

*Thomisus tripunctatus*, Lucas, in Thomson's Arch. Ent. ii. p. 400, pl. xii. fig. 3 (1863).

*Loc.* Sierra Leone (*Surg.-Capt. Clements*), and subadult specimens probably referable to this species from the Benito River (*G. L. Bates*).

### Genus PLATYTHOMISUS Dol.

#### PLATYTHOMISUS NIGRICEPS, sp. n. (Plate LVIII. fig. 32.)

♀. *Colour*. Carapace coal-black, with narrow yellow margin at the sides and posteriorly; mandibles, maxillæ, labium, and sternum black; palpi yellow, infusate quite at tip of tarsus; coxæ and trochanters of all the legs yellow; femora of 3rd and 4th pairs also yellow except for a black apical ring; femora of 1st and 2nd pairs deeply infusate, yellow quite at base; remaining segments of all

the legs jet-black. Abdomen variegated; upperside yellow, with three pairs of large black patches, the anterior pair united by a narrow bridge, the third pair the smallest and triangular; these are followed by a transversely crescentic black stripe, the concavity of which is posterior; behind this are two median black spots, one behind the other; on each side of the abdomen is a broad black stripe, which unites with its fellow of the opposite side above the pedicel in front and stops short some little distance above the spinners behind; spinners black, with a dorsally incomplete black ring around them; the ring is connected in the middle line below with a pair of broad black stripes, which unite posteriorly, are separated by a narrow median yellow stripe, and extend from the epigastric fold to the posterior third of the lower side of the abdomen; region of vulva and lung-books brown, darker mesially.

*Carapace* as wide as long, strongly convex; cephalic area sloped downwards and forwards; its total length about equal to tibia of 1st leg and to patella and tibia of 4th. *Eyes* of anterior and posterior lines distinctly recurved when viewed from above; distance between anterior and posterior medians equal to that between anterior and posterior laterals; distance between posterior medians greater than that between posterior median and lateral on each side; distance between anterior medians less than between median and lateral on each side; ocular quadrangle much wider than long, much narrowed in front, the distance between the posterior medians at least one third greater than that between the anterior medians.

*Legs* long; 1st leg about four times as long as carapace; tarsi of 1st and 2nd with thick apical scopula; protarsi and tarsi of 3rd and 4th also scopulate; tibiae and protarsi of 1st and 2nd not visibly spined beneath.

*Abdomen* voluminous, not quite twice as long as wide, broadest just behind the middle, rounded in front, narrowed and somewhat pointed behind.

*Measurements in millimetres.*—Total length 17; length of carapace 5.5, of 1st leg 22.5, 2nd leg 21, 3rd leg 12, 4th leg 14.5; length of abdomen 12, width 8.3.

*Loc.* Benito River (*G. L. Bates*). A single ♀ example.

*PLATYTHOMISUS INSIGNIS*, sp. n. (Plate LVIII. fig. 33.)

♀. *Colour.* Carapace orange-yellow, with a narrow black rim, incomplete behind but complete along the clypeus; ocular area involved in a broadish transverse black stripe; mandibles yellow, broadly black externally and apically, maxillae and labium yellow, the latter infusate marginally, the former internally at the apex; sternum yellow, with anteriorly and posteriorly incomplete median black line; palpi yellow, tip of tarsus blackish; legs coloured as in *nigriceps*, but with more black at the distal half of the femora. Abdomen mostly yellow, the upperside with three pairs of black patches, the posterior pair small and followed by a small median black spot; anterior surface of abdomen with a broad transverse

black stripe, which on the sides of the abdomen breaks up into a fan-like arrangement of narrow black longitudinal stripes extending as far as the spinners; spinners black; the lower surface of abdomen testaceous yellow.

Structurally allied to *P. nigriceps*, but the ocular quadrangle wider as compared with its length; legs distinctly shorter, the 1st less than four times as long as the carapace; length of carapace much greater than that of tibia of 1st leg and distinctly greater than patella and tibia of 4th; tibiae and protarsi of 1st and 2nd legs distinctly spined below; abdomen about one third longer than wide, a long oval, not noticeably wider behind the middle.

*Measurements in millimetres.*—Total length 21; length of carapace 7, of abdomen 14·5, width of abdomen 9·5; length of 1st leg 25, of 2nd 25, of 3rd 16, of 4th 17.

*Loc.* Benito River (*G. L. Bates*).

The previously described African species of this genus are:—

*P. heraldicus*, Karsch, Zeits. ges. Naturwiss. li. p. 315, pl. viii. fig. 4 (1878); Simon, Hist. Nat. Araignées, i. p. 1016, fig. 1077 (1895). From Zanzibar and Lake Tanganyika.

[I have seen no specimens of this species, but it certainly differs from all those enumerated in the table below in having the upper-side of the abdomen black with yellow spots, instead of yellow with black spots.]

*P. sea-maculatus*, Simon, in Donaldson Smith's 'Through Unknown African Countries,' p. 388 (1897). From Somaliland.

*P. pantherinus*, Poc., Ann. & Mag. Nat. Hist. (7) ii. p. 445, pl. xiii. fig. 7 (1898). From Nyasaland.

The four Tropical African species of this handsome genus, represented in the British Museum by the typical examples, may be distinguished as follows:—

- |  |                           |
|--|---------------------------|
| a. Carapace, mandibles, labium, maxillae, and sternum jet-black; lower side of abdomen with a pair of broad black narrowly separated bands, which unite posteriorly .....  | <i>nigriceps</i> , sp. n. |
| b. Carapace principally yellow or red, margined or spotted with black, and black in the ocular region; mandibles, maxillae, labium, and sternum principally or wholly yellow; abdomen without black bands on the middle of its ventral surface.  |                           |
| a <sup>1</sup> . Carapace red or yellow, with a black margin and transverse black frontal stripe; mandibles externally black; black abdominal spots large.   |                           |
| a <sup>2</sup> . Femora of 1st and 2nd legs deep blackish green; the black margin of carapace extending right round beneath the clypeus but not joining the ocular stripe; sides of abdomen ornamented with narrow branching stripes arranged longitudinally; no black rings round the spinners below..... | <i>insignis</i> , sp. n.  |
| b <sup>2</sup> . Femora of 1st and 2nd legs clear yellow; black margin on carapace not extending on to face,   |                           |

- stopping short on a level with the 1st leg;  
 frontal stripe involving lateral angles of carapace and sides of abdomen occupied by a continuous black stripe, extending to the spinners;  
 spinners surrounded by ring of black below ... *sex-maculatus* Sim.  
 b<sup>1</sup>. Carapace yellow, not margined with black, spotted with black; mandibles not black externally;  
 black abdominal spots small ..... *pantherinus* Poc.

## EXPLANATION OF THE PLATES.

## PLATE LV.

- Fig. 1. *Aranæthra buileri* (p. 860). × 4.  
 2. *Æthroides mammosa* (p. 861). × 3 (nearly).  
 3. *Araneus tyloscapus* (p. 851). × 2.  
 3 a. " " vulva from below.  
 3 b. " " vulva from behind.  
 4. *Cyrtophora margaritata* (p. 854). × 2.  
 4 a. " " vulva.  
 5. *Cærostris argostictus* (p. 855). × 2.  
 5 a. " " vulva.  
 5 b. " " front leg from below.  
 6. *Phalæa ferox* (p. 863), vulva.  
 6 a. " " diagram of arrangement of eyes.  
 7. *Ctenus* (*Leptoctenus*) *agilior* (p. 873), tibial spurs of palp (spurs shaded).

## PLATE LVI.

- Fig. 8. *Araneus hæmatocnemis* (p. 850). × 1½.  
 8 a. " " var.  
 8 b. " " var.  
 8 c. " " vulva, lateral view.  
 9. *Araneus rhinurus* (p. 852). × 2.  
 9 a. " " vulva, lateral view.  
 10. *Gasteracantha batesi* (p. 858). × 2.  
 11. *Phoneyusa bidentata* (p. 843), palpal organ.  
 12 & 12 a. *Sparassus benitensis* (p. 875), two forms of vulva.  
 13. *Sparassus rufilatus* (p. 878), palpal organ from below.  
 13 a. " " tibial spur of palp.  
 14. *Phrynurachne marmorata* (p. 880). × 3.

## PLATE LVII.

- Fig. 15. *Cærostris turriger* (p. 857), side view. × 1½.  
 15 a. " " vulva.  
 16. " *albescens* (p. 856), vulva.  
 17. *Peucetia longipes* (p. 861), vulva.  
 18. *Thalassius guineensis* (p. 864), vulva.  
 19. " *formosus* (p. 865), lateral view of carapace.  
 20. " *auratus* (p. 866), vulva.  
 21. " *leonensis* (p. 867), vulva.  
 22. " *regalis* (p. 868), vulva.  
 23. " *insignis* (p. 868), vulva.  
 23 a. " " lateral view of carapace.  
 24. *Dolomedes transfuga* (p. 869), tibial spur of ♂.  
 25. *Ctenus scopulatus* (p. 871), vulva.  
 26. " *rivulatus* (p. 872), tibial spur of ♂.  
 26 a. " " central portion of palpal organ.



## PLATE LVIII.

- Fig. 27. *Sparassus benitensis* (p. 875), tibial spur of ♂.  
 28. „ *trifurcatus* (p. 877), tibial spur of ♂.  
 29. „ *batesi* (p. 877), vulva.  
 30. *Torania variata* (p. 874), tibial spurs (upper or right, lower or left).  
 30a. „ „ lower tibial spur from below.  
 30b. „ „ palpal organ from below.  
 30c. „ „ membrane process of palpal organ.  
 30d. „ „ vulva.  
 31. *Palystodes plumosus* (p. 879), ♀.  $\times 1\frac{1}{4}$ .  
 31a. „ „ vulva.  
 32. *Platythomus nigriceps* (p. 881), ♀.  $\times 1\frac{1}{4}$ .  
 33. „ *insignis* (p. 882), ♀.  $\times \frac{1}{4}$ .

3. Notes on a Second Collection of Batrachians made in the Malay Peninsula and Siam, from November 1896 to September 1898, with a List of the Species recorded from those Countries. By STANLEY SMYTH FLOWER, 5th Fusiliers, F.Z.S.

[Received May 29, 1899.]

(Plates LIX. & LX.)

To the List of 34 Batrachians from the Malay Peninsula published in the Society's 'Proceedings,' 1896 (pp. 897-914), eight species can now be added, viz.:—*Rana kuhlii* Schleg., *R. macrodactyla* (Günth.), *R. larutensis* Blgr., *Microhyla ornata* (D. & B.), *M. leucostigma* Blgr., *Bufo divergens* Peters, and two large species of *Rhacophorus*; making a total of 42 species.

In the British Museum Catalogues of Batrachians 11 species have been recorded from Siam. Nine species can now be added, viz.:—*Rana macrodactyla* (Günth.), *R. nigrovittata* (Blyth), *Calophrynus pleurostigma* Tschudi, *Microhyla ornata* (D. & B.), *M. inornata* Blgr., *M. pulchra* (Hallow.), *M. achatina* (Boie), *M. berdmorei* (Blyth), and *Bufo macrotis* Blgr.; making a total of 20 species.

This list must represent, however, but a small proportion of the forms which will eventually be found to inhabit this part of the world.

In this paper a little-known frog, *Rana plicatella*, first made known by Stoliczka, is redescribed, and the tadpoles of the following species are described, I believe, for the first time:—*Rana macrondon*, *R. tigrina*, *Microhyla ornata*, *Bufo penangensis*. Besides these there is a very remarkable tadpole from Penang, the adult form of which, so far as I have been able to discover, is undescribed; it is hoped this notice of it may attract other collectors to observe it and to find out to what species it belongs.

I have to acknowledge my sense of obligation to Mr. G. A. Boulenger, F.R.S., for his invaluable advice and very kind help in answering many questions for me in letters during the last three years.